

January 20, 2003

Mr. Steve Trent Fluor Hanford Inc. 825 Jadwin Avenue Richland, WA 99352



Reference:

P.O. #630

Eberline Services R2-11-088-7396, SDG H1977

Dear Mr. Trent:

Enclosed is the data report for one solid sample designated under SAF No. F03-005 received at Eberline Services on November 19, 2002. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa C. Mannion Program Manager

Mellow Mann

MCM

Enclosure: Data Package



Analytical Services 2038 Wright Avenue P.O. Box 4040 Richmond, California 94804-0040 (510) 235-2633 Fax (510) 235-0438 Toll Free (800) 841-5487 www.eberlineservices.com

Page 1 of 2

1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H1977 was composed of one solid (soil) sample designated under SAF No. F03-005 with a Project Designations of: 200 Area Source Characterization 200-CS-1 OU – Waste Man.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.3 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.4 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analyses

Per FH's instructions, sample B15YL7 was not analyzed for isotopic uranium (see e-mail attached).

2.6 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.7 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.8 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.9 Transplutonic Analyses (Am-241, Cm-242, and Cm-243/244)

No problems were encountered during the course of the analyses.

Case Narrative

Page 2 of 2

2.10 Gamma Spectroscopy Analyses

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa C. Mannion
Program Manager

1/20/3

Date



Stephen_J_Trent@RL.

gov

01/06/2003 01:08 PM

To: mmannion@eberlineservices.com

Subject: SDGs H1969, H1977, H1982, H1984, and H1996 total U

Melissa,

We will not need to run isotopic U on SDGs SDGs H1969, H1977, H1982, H1984, and H1996.

Thanks,

Steve J. Trent Sample Management Project Coordinator Fluor Hanford - Central Plateau Project

Ph: (509) 373-5869 EFax: (866) 252-5816 Site Pager: 85-7344

EBERLINE SERVICES / RICHMOND SAMPLE DELIVERY GROUP H1977

SDG 7396
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H1977

SUMMARY DATA SECTION

TABLE OF	c o	N T	E N	T S	
About this section	•	•	•	•	1
Sample Summaries	•	•			3
Prep Batch Summary		•			5
Work Summary	•		•	•	6
Method Blanks		•	•	•	8
Lab Control Samples				•	11
Duplicates				•	13
Data Sheets	•		•	•	16
Method Summaries			•	•	18
Report Guides			•	•	28
End of Section				•	42

Melin Manne	
Prepared by	
Melin Manni	
Reviewed by	

SAMPLE DELIVERY GROUP H1977

SDG <u>7396</u> Contact Melissa C. Mannion

REPORT GUIDE

Client <u>Hanford</u>
Contract <u>No. 630</u>
Case no SDG H1977

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

REPORT GUIDES

Page 1
SUMMARY DATA SECTION

Page 1

SAMPLE DELIVERY GROUP H1977

SDG 7396
Contact Melissa C. Mannion

GUIDE, cont.

Client <u>Hanford</u>
Contract <u>No. 630</u>
Case no <u>SDG H1977</u>

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

REPORT GUIDES
Page 2
SUMMARY DATA SECTION
Page 2

SAMPLE DELIVERY GROUP H1977

Contact Melissa C. Mannion SAMPLE SUMMARY

Client Hanford Contract No. 630 Case no SDG H1977

CLIENT SAMPLE ID	LOCATION	MATRIX LEVEL	SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B15YL7	SP-1	SOLID	R211088-01	F03-005	F03-005-011	11/14/02 09:39
Method Blank		SOLID	R211088-03	F03-005		
Method Blank		SOLID	R211088-06	F03-005		
Lab Control Sample		SOLID	R211088-02	F03-005		
Lab Control Sample		SOLID	R211088-05	F03-005		
Duplicate (R211088-01)	SP-1	SOLID	R211088-04	F03-005		11/14/02 09:39
Duplicate (R211088-01)	SP-1	SOLID	R211088-07	F03-005		11/14/02 09:39

SAMPLE SUMMARY Page 1 SUMMARY DATA SECTION Page 3

SDG 7396

Lab id EBRLNE Protocol <u>Hanford</u> Version <u>Ver 1.0</u> Form DVD-CS Version 3.06 Report date <u>01/20/03</u>

EBERLINE SERVICES/RICHMOND SAMPLE DELIVERY GROUP H1977

SDG 7396 Contact <u>Melissa C. Mannion</u>

QC SUMMARY

Client	Hanford
Contract	No. 630
Case no	SDG_H1977

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE	BASIS AMOUNT	DAYS S		LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7396	F03-005-011	B15YL7	SOLID	95.5	989.9 g		11/19/02	5	R211088-01	7396-001
		Method Blank	SOLID						R211088-03	7396-003
		Method Blank	SOLID						R211088-06	7396-006
		Lab Control Sample	SOLID						R211088-02	7396-002
		Lab Control Sample	SOLID						R211088-05	7396-005
		Ouplicate (R211088-01)	SOLID	95.5	989.9 g		11/19/02	5	R211088-04	7396-004
		Duplicate (R211088-01)	SOLID		989.9 g		11/19/02	5	R211088-07	7396-007

QC SUMMARY
Page 1
SUMMARY DATA SECTION
Page 4

EBERLINE SERVICES/RICHMOND SAMPLE DELIVERY GROUP H1977

SDG <u>7396</u> Contact <u>Melissa C. Mannion</u>

PREP BATCH SUMMARY

Client <u>Hanford</u>
Contract <u>No. 630</u>
Case no <u>SDG H1977</u>

			PREPARATION ERROR				PLANCHETS ANALYZED -		ED	QUALI-
TEST	MATRIX	METHOD	ВАТСН	2σ %	CLIENT	MORE	RE BLANK	LCS	DUP/ORIG MS/ORIG	FIERS
Alpha	Spectros	сору	-							
NP	SOLID	Neptunium in Soil	7052-079	5.0	1		1	1	1/1	
PU	SOLID	Plutonium, Isotopic in Solids	7052-079	5.0	1		1	1	1/1	
TH	SOLID	Thorium, Isotopic in Soil	7052-079	5.0	1		1	1	1/1	
TP	SOLID	Americium 241/Curium in Solids	7052-079	5.0	1		1	1	1/1	
Beta	Counting									<u></u>
SR	SOLID	Total Strontium in Soil	7052-079	10.0	1		1	1	1/1	
Gas P	roportion	al Counting								
93A	SOLID	Gross Alpha in Soil	7052-079	20.0	1		1	1	1/1	
93B	SOLID	Gross Beta in Soil	7052-079	15.0	1		1	1	1/1	
Gamma	Spectros	сору			The little of th					
GAM	20F ID	Gamma Scan	7052-079	15.0	1		1	1	1/1	
Kinet	ic Phosph	orimetry								
U_T	SOLID	Uranium, Total in Soil	7052-079	9.0	1		1	1	1/1	
Liqui	d Scintil	lation Counting								
C	SOLID	Carbon 14 in Soil	7052-079	10.0	1		1	1	1/1	

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.

Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

PREP BATCH SUMMARY
Page 1
SUMMARY DATA SECTION
Page 5

EBERLINE SERVICES/RICHMOND SAMPLE DELIVERY GROUP #1977

SDG 7396 Contact <u>Melissa C. Mannion</u>

WORK SUMMARY

Client <u>Hanford</u>
Contract <u>No. 630</u>
Case no <u>SDG H1977</u>

CLIENT SAMPLE LOCATION CUSTODY	ID SAF No	MATRIX	LAB SAMPLE ID COLLECTED RECEIVED	PLANCHET	TEST	SUF- FIX	ANALYZED	REVIEWED	вү	METHOD
B15YL7			R211088-01	7396-001	93A/93		01/06/03	01/20/03	MCM	Gross Alpha in Soil
SP-1		SOLID	11/14/02	7396-001	93B/93		01/06/03	01/20/03	MCM	Gross Beta in Soil
F03-005-011	F03-005		11/19/02	7396-001	С		12/23/02	01/20/03	MCM	Carbon 14 in Soil
				7396-001	GAM		01/09/03	01/20/03	MCM	Gamma Scan
				7396-001	NP		01/15/03	01/20/03	MCM	Neptunium in Soil
				7396-001	PU		01/15/03	01/20/03	MCM	Plutonium, Isotopic in Solids
				7396-001	SR		01/06/03	01/20/03	MCM	Total Strontium in Soil
				7396-001	TH		01/07/03	01/20/03	MCM	Thorium, Isotopic in Soil
				7396-001	TP		01/20/03	01/20/03	MCM	Americium 241/Curium in Solids
				7396-001	U_T		12/19/02	12/21/02	MCM	Uranium, Total in Soil
Method Blank	· <u> </u>		R211088-03	7396-003	93A/93		01/06/03	01/20/03	MCM	Gross Alpha in Soil
		SOLID		7396-003	93B/93		01/06/03	01/20/03	MCM	Gross Beta in Soil
	F03-005			7396-003	С		12/23/02	01/20/03	MCM	Carbon 14 in Soil
	,			7396-003	GAM		01/06/03	01/20/03	MCM	Gamma Scan
				7396-003	NP		01/15/03	01/20/03	MCM	Neptunium in Soil
				7396-003	PU		01/15/03	01/20/03	MCM	Plutonium, Isotopic in Solids
				7396-003	SR		01/06/03	01/20/03	MCM	Total Strontium in Soil
				7396-003	TH		01/07/03	01/20/03	MCM	Thorium, Isotopic in Soil
				7396-003	TP		01/17/03	01/20/03	MCM	Americium 241/Curium in Solids
Method Blank			R211088-06	7396-006	U_T		12/19/02	12/21/02	MCM	Uranium, Total in Soil
	F03-005	SOLID								
Lab Control Sa	ample		R211088-02	7396-002	93A/93		01/07/03	01/20/03	мсм	Gross Alpha in Soil
	,	SOLID		7396-002	93B/93		01/07/03	01/20/03	MCM	Gross Beta in Soil
	F03-005			7396-002	С		12/24/02	01/20/03	MCM	Carbon 14 in Soil
				7396-002	GAM		01/06/03	01/20/03	MCM	Gamma Scan
				7396-002	NP		01/15/03	01/20/03	MCM	Neptunium in Soil
				7396-002	PU		01/17/03	01/20/03	MCM	Plutonium, Isotopic in Solids
				7396-002	SR		01/06/03	01/20/03	MCM	Total Strontium in Soil
				7396-002	TH		01/07/03	01/20/03	MCM	Thorium, Isotopic in Soil
				7396-002	TP-		01/17/03	01/20/03	MCM	Americium 241/Curium in Solids
Lab Control S	ample	SOLID	R211088-05	7396-005	U_T		12/19/02	12/21/02	мсм	Uranium, Total in Soil
	F03-005	402.0								

WORK SUMMARY
Page 1
SUMMARY DATA SECTION
Page 6

 Lab id
 EBRLNE

 Protocol
 Hanford

 Version
 Ver 1.0

 Form
 DVD-CWS

 Version
 3.06

 Report date
 01/20/03

EBERLINE SERVICES/RICHMOND SAMPLE DELIVERY GROUP H1977

SDG <u>7396</u> Contact <u>Melissa C. Mannion</u>

WORK SUMMARY, cont.

Client <u>Hanford</u>
Contract <u>No. 630</u>
Case no <u>SDG H1977</u>

CLIENT SAM LOCATION CUSTODY	IPLE ID SAF No	MATRIX	LAB SAMPLE ID COLLECTED RECEIVED	PLANCHET	TEST	SUF- FIX	ANALYZED	REVIEWED	вү	METHOD
Duplicate	(R211088-01)		R211088-04	7396-004	93A/93		01/06/03	01/20/03	мсм	Gross Alpha in Soil
SP-1		SOLID	11/14/02	7396-004	93B/93		01/06/03	01/20/03	MCM	Gross Beta in Soil
	F03-005		11/19/02	7396-004	С		12/24/02	01/20/03	MCM	Carbon 14 in Soil
				7396-004	GAM		01/07/03	01/20/03	MCM	Gamma Scan
				7396-004	NP		01/15/03	01/20/03	MCM	Neptunium in Soil
				7396-004	PU		01/15/03	01/20/03	MCM	Plutonium, Isotopic in Solids
				7396-004	SR		01/06/03	01/20/03	MCM	Total Strontium in Soil
				7396-004	TH		01/07/03	01/20/03	MCM	Thorium, Isotopic in Soil
				7396-004	ŢP		01/17/03	01/20/03	MCM	Americium 241/Curium in Solids
Duplicate	(R211088-01)		R211088-07	7396-007	U_T		12/19/02	12/21/02	MCM	Uranium, Total in Soil
SP-1	•	SOLID	11/14/02							
	F03-005		11/19/02							

TEST	SAF No	COUNTS OF	TESTS BY SAM	CLIENT MORE	RE BLANK	LCS	DUP SPIKE	TOTAL
93A/93	F03-005	Gross Alpha in Soil	900.0_ALPHABETA_GPC	1	1	1	1	4
938/93	F03-005	Gross Beta in Soil	900.0_ALPHABETA_GPC	1	1	1	1	4
С	F03-005	Carbon 14 in Soil	C14_COX_LSC	1	1	1	1	4
GAM	F03-005	Gamma Scan	GAMMA_GS	1	1	1	1	4
NP	F03-005	Neptunium in Soil	NP237_LLE_PLATE_AEA	1	1	1	1	4
PU	F03-005	Plutonium, Isotopic in Solids	PUISO_PLATE_AEA	1	1	1	1	4
SR	F03-005	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	1	1	1	1	4
TH	F03-005	Thorium, Isotopic in Soil	THISO_IE_PLATE_AEA	1	1	1	1	4
TP	F03-005	Americium 241/Curium in Solids	AMCMISO_IE_PLATE_AEA	1	1	1	1	4
U_ T	F03-005	Uranium, Total in Soil	UTOT_KPA	1	1	1	1	4
TOTALS		·		10	10	10	10	40

WORK SUMMARY
Page 2
SUMMARY DATA SECTION
Page 7

Lab id <u>EBRLNE</u>

Protocol <u>Hanford</u>

Version <u>Ver 1.0</u>

Form <u>DVD-CWS</u>

Version <u>3.06</u>

Report date <u>01/20/03</u>

EBERLINE SERVICES/RICHMOND SAMPLE DELIVERY GROUP H1977

R211088-03

METHOD BLANK

Method Blank

	7396 Melissa C. Mannion	Client/Case no Contract	SDG_H1977
Lab sample id Dept sample id		Client sample id Material/Matrix SAF No	SOLID

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TES:
Gross Alpha	12587-46-1	-0.368	0.95	2.3	10	ט	93A
Gross Beta	12587-47-2	-0.624	3.1	5.5	15	ซ	93B
Carbon 14	14762-75-5	-2.15	1.8	3.1	50	U	C
Total Strontium	SR-RAD	-0.145	0.16	0.37	1.0	U	SR
Thorium 228	14274-82-9	0.037	0.15	0.28		ប	TH
Thorium 230	14269-63-7	0.183	0.22	0.28	1.0	ซ	TH
Thorium 232	TH-232	0	0.073	0.28	1.0	ប	TH
Neptunium 237	13994-20-2	-0.033	0.13	0.31	1.0	U	NP
Plutonium 238	13981-16-3	0.062	0.18	0.34	1.0	U	PU
Plutonium 239/240	PU-239/240	-0.031	0.12	0.29	1.0	ប	PU
Curium 242	15510-73-3	0	0.026	0.057		ប	TP
Curium 243/244	CM-243/244	0.021	0.043	0.075	1.0	ប	TP
Americium 241	14596-10-2	0.047	0.051	0.075	1.0	U	TP
Sodium 22	13966-32-0	U		0.014		U	GAM
Potassium 40	13966-00-2	บ		0.16		ប	GAM
Cobalt 60	10198-40-0	ប		0.013	0.050	ប	GAM
Antimony 125	14234-35-6	U		0.028		U	GAM
Tin 126	15832-50-5	υ		0.017		ប	GAM
Barium 133	13981-41-4	ប		0.014		ប	GAM
Cesium 134	13967-70-9	ប		0.016		ប	GAM
Cesium 137	10045-97-3	U		0.010	0.10	ប	GAM
Radium 226	13982-63-3	U		0.022		U	GAM
Radium 228	15262-20-1	ប		0.047		U	GAM
Europium 152	14683-23-9	U		0.034	0.10	U	GAM
Europium 154	15585-10-1	ប		0.043	0.10	ប	GAM
Europium 155	14391-16-3	U		0.027	0.10	U	GAM
Thorium 228	14274-82-9	U		0.016		ប	GAM
Thorium 232	TH-232	U		0.047		U	GAM
Uranium 235	15117-96-1	บ		0.036		U	GAM

200 Area Source Chara. 200-CS-1 OU

METHOD BLANKS
Page 1
SUMMARY DATA SECTION
Page 8

EBERLINE SERVICES / RICHMOND SAMPLE DELIVERY GROUP H1977

R211088-03

BLANK, cont.

Method Blank

SDG <u>7396</u> Contact <u>Melissa C. M</u>	Client/Case no <u>Hanford</u> Mannion Contract No. 630	SDG_H1977
Lab sample id <u>R211088-03</u> Dept sample id <u>7396-003</u>	Client sample id <u>Method Blank</u> Material/Matrix SAF No <u>F03-005</u>	SOLID

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Uranium 238 Americium 241	U-238 14596-10-2	ប		1.4 0.037		U U	GAM GAM

200 Area Source Chara. 200-CS-1 OU

QC-BLANK 43470

METHOD BLANKS
Page 2
SUMMARY DATA SECTION
Page 9

EBERLINE SERVICES/RICHMOND SAMPLE DELIVERY GROUP H1977

R211088-06

METHOD BLANK

Method Blank

	7396 Melissa C. Mannion	Client/Case no Contract	· · · · · · · · · · · · · · · · · · ·	SDG H1977
Lab sample id Dept sample id		Client sample id Material/Matrix SAF No		SOLID

ANALYTE CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QU ALI- FIERS	TEST
Total Uranium (ug/g) 7440-61-1	0	0.002	0.005	0.10	Ū	U_T

200 Area Source Chara. 200-CS-1 OU

QC-BLANK 43431

METHOD BLANKS
Page 3
SUMMARY DATA SECTION
Page 10

EBERLINE SERVICES/RICHMOND SAMPLE DELIVERY GROUP #1977

R211088-02

LAB CONTROL SAMPLE

Lab Control Sample

SDG <u>7396</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford SDG H1977</u> Contract <u>No. 630</u>
Lab sample id <u>R211088-02</u> Dept sample id <u>7396-002</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix

ANALYTE	RESULT pCî/g	2ø ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	
Gross Alpha	197	14	3,5	10		93A	200	8.0	98	68-132	70-130
Gross Beta	207	11	6.5	15		93B	212	8.5	98	76-124	70-130
Carbon 14	1830	19	4.3	50		c	1910	76	96	84-116	80-120
Total Strontium	22.4	1.2	0.37	1.0		SR	21.2	0.85	106	81-119	80-120
Thorium 230	47.0	9.6	1.2	1.0		TH	40.8	1.6	115	63-137	80-120
Neptunium 237	17.6	2.0	0.36	1.0		NP	19.9	0.80	88	82-118	80-120
Plutonium 238	22.8	2.3	0.21	1.0		PU	24.4	0.98	93	83-117	80-120
Plutonium 239/240	25.9	2.6	0.21	1.0		PU	26.4	1.1	98	82-118	80-120
Curium 243/244	19.2	0.87	0.11	1,0		TP	18.8	0.75	102	88-112	80-120
Americium 241	18.5	0.85	0.10	1.0		TP	19.1	0.76	97	88-112	80-120
Cobalt 60	1.06	0.075	0.030	0.050		GAM	0.994	0.040	107	73-127	80-120
Cesium 137	1.42	0.074	0.045	0.10		GAM	1.30	0.052	109	73-127	80-120

200 Area Source Chara. 200-CS-1 OU

ſ	QC-LCS 43469	 	 	
I	WC-LC3 43409			

LAB CONTROL SAMPLES
Page 1
SUMMARY DATA SECTION
Page 11

Lab id <u>EBRLNE</u>

Protocol <u>Hanford</u>

Version <u>Ver 1.0</u>

Form <u>DVD-LCS</u>

Version <u>3.06</u>

Report date <u>01/20/03</u>

EBERLINE SERVICES/RICHMOND SAMPLE DELIVERY GROUP H1977

R211088-05

LAB CONTROL SAMPLE

Lab Control Sample

SDG 7396	Client/Case no <u>Hanford</u> <u>SDG H1977</u>
Contact Melissa C. Mannion	Contract <u>No. 630</u>
Lab sample id <u>R211088-05</u> Dept sample id <u>7396-005</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix <u>SOLID</u> SAF No <u>F03-005</u>

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST		2σ ERR pCi/g		3σ LMTS (TOTAL)	
Total Uranium (ug/g)	13.6	1.5	0.045	0.10		U_T	13.2	0.53	103	77-123	80-120

200 Area Source Chara. 200-CS-1 OU

QC-LCS 43430		
--------------	--	--

LAB CONTROL SAMPLES
Page 2
SUMMARY DATA SECTION
Page 12

SAMPLE DELIVERY GROUP H1977

R211088-04

DUPLICATE

B15YL7

SDG 7396 Client/Case no <u>Hanford</u> SDG_H1977 Contract No. 630 Contact Melissa C. Mannion DUPLICATE ORIGINAL Lab sample id <u>R211088-01</u> Client sample id B15YL7 Lab sample id <u>R211088-04</u> Dept sample id <u>7396-001</u> Location/Matrix SP-1 SOLID Dept sample id <u>7396-004</u> Received 11/19/02 Collected/Weight 11/14/02 09:39 989.9 g % solids <u>95.5</u> Custody/SAF No F03-005-011 F03-005 % solids <u>95.5</u>

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ τοτ	PRO
Gross Alpha	3.41	2.5	2.9	10		93A	4.22	2.7	2.9		21	151	
Gross Beta	14.3	4.4	6.3	15		93B	16.0	4.0	5.2		11	67	
Carbon 14	-1.35	1.7	2.8	50	U	С	-0.674	1.8	3.0	υ	-		
Total Strontium	0,963	0.21	0.24	1.0		SR	0.895	0.21	0.25		7	52	
Thorium 228	0.228	0.23	0.29		U	тн Ј	0.270	0.23	0.29	U	-		
Thorium 230	0.190	0.23	0.29	1.0	U	TH	0.154	0.15	0.29	U	-		
Thorium 232	0.152	0.15	0.29	1.0	U	TH	0.192	0.15	0.29	U	-		
Neptunium 237	0.060	0.060	0.089	1.0	U	NP	0	0.12	0.32	U	-		
Plutonium 238	0	0.14	0.33	1.0	U	PU	0	0.066	0.25	U	-		
Plutonium 239/240	0.311	0.21	0.26	1.0		PU	0.265	0.20	0.25		16	151	
Curium 242	-0.006	0.024	0.057		U	TP	0	0.10	0.39	U	-		
Curium 243/244	0.036	0.045	0.077	1.0	U	TP	0	0.077	0.29	U	•		
Americium 241	0.018	0.036	0.043	1.0	U	TP	0.153	0.15	0.29	U	-		
Sodium 22	U		0.049		U	GAM	U		0.040	U	-		
Potassium 40	12.3	0.65	0.32			GAM	11.6	0.38	0.20		6	33	
Cobalt 60	υ		0.042	0.050	U	GAM	U		0.018	u	-		
Antimony 125	U		0.085		U	GAM	U		0.040	U	-		
Tin 126	U		0.21		U	GAM	U		0.035	U	-		
Barium 133	u		0.047		IJ	GAM	U .		0.017	U	-		
Cesium 134	υ		0.055		U	GAM	U		0.023	U	-		
Cesium 137	0.288	0.038	0.036	0.10		GAM	0.312	0.022	0.021		8	39	
Radium 226	0.493	0.073	0.067			GAM	0.495	0.036	0.036		0	40	
Radium 228	0.721	0.16	0.16			GAM	0.705	0.076	0.077		2	49	
Europium 152	U		0.096	0.10	U	GAM	U		0.044	U	-		
Europium 154	. U		0.14	0.10	U	GAM	U		0.058	U	•		
Europium 155	U		0.095	0.10	U	GAM	น		0.098	U	-		
Thorium 228	0.892	0.066	0.059			GAM	0.668	0.022	0.021		29	35	
Thorium 232	0.721	0.16	0.16			GAM	0.705	0.076	0.077		2	49	

200 Area Source Chara. 200-CS-1 OU

DUPLICATES
Page 1
SUMMARY DATA SECTION
Page 13

Protocol Hanford

Version Ver 1.0

Form DVD-DUP

Version 3.06

Report date 01/20/03

Lab id EBRLNE

SAMPLE DELIVERY GROUP H1977

R211088-04

DUPLICATE, cont.

B15YL7

SDG <u>7396</u>		Client/Case no <u>Hanford SDG H1977</u>
Contact <u>Melissa C</u>	Mannion	Contract No. 630
DUPLICATE	ORIGINAL	
Lab sample id <u>R211088-04</u>	Lab sample id <u>R211088-01</u>	Client sample id <u>B15YL7</u>
Dept sample id <u>7396-004</u>	Dept sample id <u>7396-001</u>	Location/Matrix SP-1 SOLID
	Received <u>11/19/02</u>	Collected/Weight <u>11/14/02 09:39 989.9 g</u>
% solids <u>95.5</u>	% solids <u>95.5</u>	Custody/SAF No <u>F03-005-011 F03-005</u>

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ PROT TOT LIMIT
Uranium 235	U		0.14		U	GAM	υ		0.068	U	-	
Uranium 238	ນ		4.7		IJ	GAM	υ		2.0	U	-	I
Americium 241	U		0.14		U	GAM	Ü		0.062	U	-	

200 Area Source Chara. 200-CS-1 OU

DUPLICATES
Page 2
SUMMARY DATA SECTION
Page 14

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06

Report date <u>01/20/03</u>

SAMPLE DELIVERY GROUP H1977

R211088-07

DUPLICATE

B15YL7

SpG <u>7396</u> Contact Melissa C. Mannion		Client/Case no <u>Hanford SDG H1977</u> Contract <u>No. 630</u>
DUPLICATE	ORIGINAL	Cliant comple id B15VI 7
Lab sample id <u>R211088-07</u> Dept sample id <u>7396-007</u>	Lab sample id <u>R211088-01</u> Dept sample id <u>7396-001</u>	Client sample id <u>B15YL7</u> Location/Matrix <u>SP-1</u> SOLID
	Received <u>11/19/02</u> % solids <u>95.5</u>	Collected/Weight 11/14/02 09:39 989.9 g Custody/SAF No <u>F03-005-011</u> <u>F03-005</u>

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ PROT TOT LIMIT
Total Uranium (ug/g)	0.573	0.064	0.005	0.10		U_T	0.562	0.063	0.005		2	30

200 Area Source Chara. 200-CS-1 OU

DUPLICATES
Page 3
SUMMARY DATA SECTION
Page 15

EBERLINE SERVICES / RICHMOND SAMPLE DELIVERY GROUP H1977

R211088-01

DATA SHEET

B15YL7

E	7396 Melissa C. Mannion	Client/Case no Contract	 SDG_H1977

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Gross Alpha	12587-46-1	4.22	2.7	2.9	10		93A
Gross Beta	12587-47-2	16.0	4.0	5.2	15		93B
Carbon 14	14762-75-5	-0.674	1.8	3.0	50	U	C
Total Strontium	SR-RAD	0.895	0.21	0.25	1.0		SR
Thorium 228	14274-82-9	0.270	0.23	0.29		ប	TH
Thorium 230	14269-63-7	0.154	0.15	0.29	1.0	ប	TH
Thorium 232	TH-232	0.192	0.15	0.29	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0.562	0.063	0.005	0.10		U_T
Neptunium 237	13994-20-2	0	0.12	0.32	1.0	Ū	NP
Plutonium 238	13981-16-3	0	0.066	0.25	1.0	Ū	PU
Plutonium 239/240	PU-239/240	0.265	0.20	0.25	1.0		PU
Curium 242	15510-73-3	0	0.10	0.39		U	TP
Curium 243/244	CM-243/244	0	0.077	0.29	1.0	U	TP
Americium 241	14596-10-2	0.153	0.15	0.29	1.0	ซ	TP
Sodium 22	13966-32-0	U		0.040		Ū	GAM
Potassium 40	13966-00-2	11.6	0.38	0.20			GAM
Cobalt 60	10198-40-0	U		0.018	0.050	U	GAM
Antimony 125	14234-35-6	U		0.040		ប	GAM
Tin 126	15832-50-5	U		0.035		ប	GAM
Barium 133	13981-41-4	U		0.017		ប	GAM
Cesium 134	13967-70-9	U		0.023		ซ	GAM
Cesium 137	10045-97-3	0.312	0.022	0.021	0.10		GAM
Radium 226	13982-63-3	0.495	0.036	0.036			GAM
Radium 228	15262-20-1	0.705	0.076	Ó.077			GAM
Europium 152	14683-23-9	U		0.044	0.10	ซ	GAM
Europium 154	15585-10-1	U		0.058	0.10	ש	GAM
Europium 155	14391-16-3	U		0.098	0.10	ับ	GAM
Thorium 228	14274-82-9	0.668	0.022	0.021			GAM

200 Area Source Chara. 200-CS-1 OU

DATA SHEETS
Page 1
SUMMARY DATA SECTION
Page 16

EBERLINE SERVICES/RICHMOND SAMPLE DELIVERY GROUP H1977

R211088-01

DATA SHEET, cont

B15YL7

	7396 Melissa C. Mannion	Client/Case no Contract	— — — — — — — — — — — — — — — — — — —
		-	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Thorium 232	TH-232	0.705	0.076	0.077			GAM
Uranium 235	15117-96-1	U		0.068		U	GAM
Uranium 238	U-238	U		2.0		U	GAM
Americium 241	14596-10-2	υ		0.062		U	GAM

200 Area Source Chara. 200-CS-1 OU

DATA SHEETS
Page 2
SUMMARY DATA SECTION
Page 17

SAMPLE DELIVERY GROUP H1977

Test NP Matrix SOLID
SDG 7396
Contact Melissa C. Mannion

METHOD SUMMARY NEPTUNIUM IN SOIL ALPHA SPECTROSCOPY

Contract No. 630
Contract SDG H1977

RESULTS

CLIENT SAMPLE ID SA	MPLE ID	RAW SUF- TEST FIX PLANCHET	Neptu 23				
Preparation batch 7052-079							
-	11088-01	7396-001	U				
BLK (QC 1D=43470) R2	211088-03	7396-003	U				
LCS (QC ID=43469) R2	211088-02	7396-002	ok				
Duplicate (R211088-01) R2	211088-04	7396-004	-	U			

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g		DILU- TION	YIELD %			 DRIFT KeV	_	PREPARED	ANAL- YZED	DETECTOR
Preparation batch 7052-0	79 2σp	rep er	ror 5.	0 %	Reference	Lab	Notebool	7052	pg.	079					
B15YL7	R211088-01			0.32	0.500			81		137		62	01/14/03	01/15	SS-021
BLK (QC ID=43470)	R211088-03			0.31	0.500			67		138			01/14/03	01/15	SS-024
LCS (QC ID=43469)	R211088-02			0.36	0.500			64		137			01/14/03	01/15	SS-022
Duplicate (R211088-01) (QC ID=43471)	R211088-04			0.089	0.500			70		138		62	01/14/03	01/15	SS-039
Nominal values and limit	s from meth	od		1.0	0.500			20-10	5	100	 	180			

PROCEDURES	REFERENCE	NP237_LLE_PLATE_AEA
	CP-060	Soil Preparation, rev 4
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-934	Neptunium from Solids and Water by Extraction Chromatography, rev 3

AVERAGES ± 2 SD	MDA _	0.27	±	0.24
FOR 4 SAMPLES	YIELD _	70	ŧ	<u>15</u>

METHOD SUMMARIES
Page 1
SUMMARY DATA SECTION
Page 18

Lab id <u>EBRLNE</u>

Protocol <u>Hanford</u>

Version <u>Ver 1.0</u>

Form <u>DVD-CMS</u>

Version <u>3.06</u>

Report date <u>01/20/03</u>

SAMPLE DELIVERY GROUP H1977

Test PU Matrix SQLID
SDG 7396
Contact Melissa C. Mannion

METHOD SUMMARY PLUTONIUM, ISOTOPIC IN SOLIDS ALPHA SPECTROSCOPY

Client <u>Hanford</u>
Contract <u>No. 630</u>
Contract <u>SDG H1977</u>

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX PLANCHET	Plutonium 238	Plutonium 239/240	
Preparation batch 7052-	079		<u> </u>	-	
B15YL7	R211088-01	7396-001	U	0,265	
BLK (QC ID=43470)	R211088-03	7396-003	u	U	
LCS (QC ID=43469)	R211088-02	7396-002	ok	ok	
Duplicate (R211088-01)	R211088-04	7396-004	- U	ok	
Nominal values and limi 200 Area Source Chara.		RDLs (pCi/g)	1.0	1.0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	SAMPLE ID	RAW S		K MD/ i∕g	A ALIQ		DILU- TION	YIELD %					PREPARED	ANAL- YZED	DETECTOR
Preparation batch 7052-0	79 2σ pr	ep erro	or 5.0 %	R	eference	Lab	Notebool	7052	pg.	079					
B15YL7	R211088-01		0	.25	0.500			76		119		62	01/14/03	01/15	SS-016
BLK (QC ID=43470)	R211088-03		0	.34	0.500			86		120			01/14/03	01/15	SS-021
LCS (QC ID=43469)	R211088-02		0	.21	0.500			89		124			01/14/03	01/17	SS-051
Duplicate (R211088-01) (QC ID=43471)	R211088-04		0	.33	0.500			79		120		62	01/14/03	01/15	SS-022
Nominal values and limit	s from metho	»d	1	.0	0.500			20-105	;	100	100	 180			

	PROCEDURES	REFERENCE CP-060	PUISO_PLATE_AEA Soil Preparation, rev 4
١			•
		CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
		CP-941	Plutonium in Water and Dissolved Samples by
l			Extraction Chromatography, rev 1
		CP-008	Heavy Element Electroplating, rev 7
1			

AVERAGES ± 2 SD MDA 0.28 ± 0.13
FOR 4 SAMPLES YIELD 82 ± 12

METHOD SUMMARIES
Page 2
SUMMARY DATA SECTION
Page 19

SAMPLE DELIVERY GROUP H1977

Test TH Matrix SOLID
SDG 7396
Contact Melissa C. Mannion

METHOD SUMMARY

THORIUM, ISOTOPIC IN SOIL
ALPHA SPECTROSCOPY

Client <u>Hanford</u>

Contract <u>No. 630</u>

Contract <u>SDG H1977</u>

RESULTS

CLIENT SAMPLE ID	SAMPLE ID	RAW SUF- TEST FIX		Thoriu	n 230			
Preparation batch 7052-079	9					 	 	
B15YL7	R211088-01		7396-001	U				
BLK (QC ID=43470) R	R211088-03		7396-003	U				
LCS (QC 1D=43469) F	R211088-02		7396-002	ok				
Duplicate (R211088-01) F	R211088-04		7396-004	-	U			

METHOD PERFORMANCE

CLIENT SAMPLE ID	SAMPLE ID	RAW TEST		X MD	A ALIQ		DILU-	YIELD %			 		PREPARED	ANAL- YZED	DETECTOR
Preparation batch 7052-0		rep err	or 5.0 7	6 R	eference	Lab	Notebool	k 7052	pg.	079					
B15YL7	R211088-01		C	.29	0.250			98		156		54	01/06/03	01/07	SS-061
BLK (QC ID=43470)	R211088-03		C	.28	0.250			103		156			01/06/03	01/07	SS-065
LCS (QC ID=43469)	R211088-02		1	.2	0.250			26		156			01/06/03	01/07	SS-064
Duplicate (R211088-01) (QC ID=43471)	R211088-04		C	.29	0.250			103		156		54	01/06/03	01/07	SS-066
Nominal values and limit	ts from meth	od	1	.0	0.250			20-105	 5	150		180			

- 1			
1	PROCEDURES	REFERENCE	THISO_IE_PLATE_AEA
ı		CP-060	Soil Preparation, rev 4
		CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
		CP-907	Thorium in Water and Dissolved Solid Samples by
ı			TEVA and Anion Exchange Column Method, rev 2
		CP-008	Heavy Element Electroplating, rev 7
1			·

AVERAGES ± 2 SD MDA 0.52 ± 0.91
FOR 4 SAMPLES YIELD 82 ± 75

METHOD SUMMARIES
Page 3
SUMMARY DATA SECTION
Page 20

Lab id <u>EBRLNE</u>

Protocol <u>Hanford</u>

Version <u>Ver 1.0</u>

Form <u>DVD-CMS</u>

Version <u>3.06</u>

Report date <u>01/20/03</u>

SAMPLE DELIVERY GROUP H1977

Test <u>TP</u> Matrix <u>SOLID</u>

SDG <u>7396</u>

Contact <u>Melissa C. Mannion</u>

METHOD SUMMARY AMERICIUM 241/CURIUM IN SOLIDS ALPHA SPECTROSCOPY

Client Hanford

Contract No. 630

Contract SDG_H1977

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX P	LANCHET	Curit 243/2		Americ 241	- · - · ·	
Preparation batch 7052-	079							
B15YL7	R211088-01	73	396-001	U		U		
BLK (QC ID=43470)	R211088-03	73	396-003	. U		U		
LCS (QC ID=43469)	R211088-02	73	396-002	ok		ok		
Duplicate (R211088-01)	R211088-04	73	396-004	-	U	-	U	
Nominal values and limi 200 Area Source Chara.		d RDLs	(pCi/g)	1.0		1.0		

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE	ID	RAW TEST	SUF- FIX	MAX M pCi/g			DILU-	YIELD %				 	PREPARED	ANAL -	DETECTOR
Preparation batch 7052-07	79 20	σрг	ep er	гог 5.	.0 %	Reference	Lab	Notebool	k 7052	pg.	079					
B15YL7	R211088	-01			0.29	0.500			68		109		67	01/17/03	01/20	\$\$-055
BLK (QC ID=43470)	R211088	-03			0.07	5 0.500			70		987			01/17/03	01/17	SS-024
LCS (QC ID=43469)	R211088	-02			0.11	0.500			61		987			01/17/03	01/17	SS-022
Duplicate (R211088-01) (QC ID=43471)	R211088	-04			0.07	7 0.500			69		991		64	01/17/03	01/17	SS-042
Nominal values and limits	s from me	etho	d		1.0	0.500			20-10	5	100	100	180			

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA	
	CP-060	Soil Preparation, rev 4	
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2	
	CP-963	Americium and Curium in Water and Dissolved	
		Samples by Extraction Chromatography, rev 3	
	CP-008	Heavy Element Electroplating, rev 7	

AVERAGES ± 2 SD	MDA	0.14	±	0.21
FOR 4 SAMPLES	YIELD	_67	ŧ	8

METHOD SUMMARIES
Page 4
SUMMARY DATA SECTION
Page 21

SAMPLE DELIVERY GROUP H1977

Test SR Matrix SOLID

SDG <u>7396</u>

Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL
BETA COUNTING

Client <u>Hanford</u>
Contract <u>No. 630</u>
Contract <u>SDG H1977</u>

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF-	PLANCHET	Total Strontium	
Preparation batch 7052-0	079			 	
B15YL7	R211088-01		7396-001	0.895	
BLK (QC ID=43470)	R211088-03		7396-003	U	
LCS (QC ID=43469)	R211088-02		7396-002	ok	
Duplicate (R211088-01)	R211088-04		7396-004	ok	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST			= =	PREP FAC	DILU-	YIELD				DR I FT KeV		PREPARED	ANAL- YZED	DETECTOR
Preparation batch 7052-0	79 2σp	rep eri	ror 1	10.0 %	Reference	Lab	Notebool	- k 7052	pg.	079			_			
B15YL7	R211088-01			0.25	1.00			90		100			53	01/06/03	01/06	GRB-218
BLK (QC ID=43470)	R211088-03			0.37	1.00			76		100				01/06/03	01/06	GRB-202
LCS (QC ID=43469)	R211088-02			0.37	1.00			84		60				01/06/03	01/06	GRB-202
Duplicate (R211088-01) (QC ID=43471)	R211088-04			0.24	1.00			94		100			53	01/06/03	01/06	GRB-220
Nominal values and limit	s from meth	od		10	1.00	· · · · ·		30-105	 5	100	-		180			

PROCEDURES	REFERENCE	SRTOT_SEP_PRECIP_GPC
	CP-060	Soil Preparation, rev 4
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-502	Strontium in Solids, rev 6
L		

AVERAGES ± 2 SD MDA 0.31 ± 0.14
FOR 4 SAMPLES YIELD 86 ± 16

METHOD SUMMARIES
Page 5
SUMMARY DATA SECTION
Page 22

SAMPLE DELIVERY GROUP H1977

Test <u>93A</u> Matrix <u>SOLID</u> SDG <u>7396</u>

Contact <u>Melissa C. Mannion</u>

METHOD SUMMARY GROSS ALPHA IN SOIL GAS PROPORTIONAL COUNTING

| Client | Hanford | Contract | No. 630 | Contract | SDG | H1977 | Contract | SDG | S

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF-	PLANCHET	Gross Alpha	
Preparation batch 7052-	079				
B15YL7	R211088-01	93	7396-001	4,22	
BLK (QC ID=43470)	R211088-03	93	7396-003	U	
LCS (QC ID=43469)	R211088-02	93	7396-002	ok	
Duplicate (R211088-01)	R211088-04	93	7396-004	ok	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST			PREP FAC	DILU-	RESID mg	EFF %		 		PREPARED	ANAL- YZED	DETECTOR
Preparation batch 7052-6)79 2σ pr	ep err	or 20.0 %	Reference	Lab	Notebool	7052	pg.	079			· · · · · · · · · · · · · · · · · · ·		
B15YL7	R211088-01	93	2.9	0.100			23		107		53	01/06/03	01/06	GRB-109
BLK (QC ID=43470)	R211088-03	93	2.3	0.100			20		107			01/06/03	01/06	GR8-111
LCS (QC ID=43469)	R211088-02	93	3.5	0.100			21		100			01/06/03	01/07	GRB-115
Duplicate (R211088-01) (QC ID=43471)	R211088-04	93	2.9	0.100			23		107		53	01/06/03	01/06	GRB-112
Nominal values and limit	ts from metho	od	10	0.100			5-250)	100		180			

PROCEDURES REFERE	NCE 900.0_ALPHABETA_GPC
CP-060	Soil Preparation, rev 4
CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
CP-125	Gross Alpha and Beta in Dissolved Solids, rev 3

AVERAGES ± 2 SD MDA 2.9 ± 0.98

FOR 4 SAMPLES RESIDUE 22 ± 3

METHOD SUMMARIES
Page 6
SUMMARY DATA SECTION
Page 23

 Lab id
 EBRLNE

 Protocol
 Hanford

 Version
 Ver 1.0

 Form
 DVD-CMS

 Version
 3.06

 Report date
 01/20/03

SAMPLE DELIVERY GROUP H1977

Test 938 Matrix SOLID
SDG 7396
Contact Melissa C. Mannion

METHOD SUMMARY GROSS BETA IN SOIL

GROSS BETA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1977

RESULTS

CLIENT SAMPLE ID	SAMPLE ID	RAW SU TEST FI	F- X PLANCHET	Gross Beta	
Preparation batch 7052-0	79				
B15YL7	R211088-01	93	7396-001	16.0	
BLK (QC ID=43470)	R211088-03	93	7396-003	U	
LCS (QC ID=43469)	R211088-02	93	7396-002	ok	
Duplicate (R211088-01)	R211088-04	93	7396-004	ok	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW :				DILU- TION	RESID mg	EFF		 DRIFT KeV		PREPARED	ANAL- YZED	DETECTOR
Preparation batch 7052-0)79 2 <i>a</i> pr	rep err	or 15.0 %	Reference	Lab	Notebool	c 7052	pg.	079	 	_			· · · ·
B15YL7	R211088-01	93	5.2	0.100			23		107		53	01/06/03	01/06	GRB-109
BLK (QC ID=43470)	R211088-03	93	5.5	0.100			20		107			01/06/03	01/06	GRB-111
LCS (QC ID=43469)	R211088-02	93	6.5	0.100			21		100			01/06/03	01/07	GRB-115
Duplicate (R211088-01) (QC ID=43471)	R211088-04	93	6.3	0.100			23		107		53	01/06/03	01/06	GRB-112
Nominal values and limit	ts from metho	od	15	0.100	···		5-250	 D	100	 	180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-060	Soil Preparation, rev 4
	CP-071	Soil Dissolution, > 1.0g Aliquot, rev 2
	CP-125	Gross Alpha and Beta in Dissolved Solids, rev 3
\perp		

AVERAGES ± 2 SD MDA 5.9 ± 1.2

FOR 4 SAMPLES RESIDUE 22 ± 3

METHOD SUMMARIES
Page 7
SUMMARY DATA SECTION
Page 24

 Lab id
 EBRLNE

 Protocol
 Hanford

 Version
 Ver 1.0

 Form
 DVD-CMS

 Version
 3.06

 Report
 date

 01/20/03

SAMPLE DELIVERY GROUP H1977

Test GAM Matrix SOLID
SDG 7396
Contact Melissa C. Mannion

METHOD SUMMARY GAMMA SCAN GAMMA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1977

RESULTS

CLIENT SAMPLE ID	SAMPLE ID	RAW SUF- TEST FIX PLANCHET	Cobalt 60	Cesium 137	
Preparation batch 7052-	079				
B15YL7	R211088-01	7396-001	U	0.312	
BLK (QC ID=43470)	R211088-03	7396-003	U	U ·	
LCS (QC ID=43469)	R211088-02	7396-002	ok	ok	
Duplicate (R211088-01)	R211088-04	7396-004	- U	ok	
Nominal values and limi 200 Area Source Chara.		d RDLs (pCi/g)	0.050	0.10	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW Test		MDA pCi/g	ALIQ g		DILU-	YIELD %			 		PREPARED	ANAL " YZED	DETECTOR
Preparation batch 7052-0)79 2 <i>o</i> pr	rep err	or 15	.0 % R	eference	Lab	Notebook	7052	pg.	079	 			vg.	
B15YL7	R211088-01			0.16	719					784		56	01/02/03	01/09	02,03,00
BLK (QC ID=43470)	R211088-03			0.12	719					99			01/02/03	01/06	01,04,00
LCS (QC ID=43469)	R211088-02			0.030	719					101			01/02/03	01/06	MB,05,00
Duplicate (R211088-01) (QC ID=43471)	R211088-04		,	0.34	719					99		54	01/02/03	01/07	02,04,00
Nominal values and limit	s from metho	od		0.050	719			,		100	 	180			

	PROCEDURES		GAMMA_GS
		CP-060 CP-100	Soil Preparation, rev 4 Ge(Li) Preparation for Commercial Samples, rev 5
١		CF - 100	de(Li) Freparation for considerat samples, fee 5

METHOD SUMMARIES
Page 8
SUMMARY DATA SECTION
Page 25

Lab id <u>EBRLNE</u>

Protocol <u>Hanford</u>

Version <u>Ver 1.0</u>

Form <u>DVD-CMS</u>

Version <u>3.06</u>

Report date <u>01/20/03</u>

SAMPLE DELIVERY GROUP H1977

Test U T Matrix SOLID

SDG 7396

Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, TOTAL IN SOIL KINETIC PHOSPHORIMETRY

Client	Hanford
Contract	No. 630
Contract	SDG_H1977

RESULTS

CLIENT SAMPLE ID		RAW SUF- TEST FIX PLANCHET	Total Uranium
Preparation batch 7052-	079		
B15YL7	R211088-01	7396-001	0.562
BLK (QC ID=43431)	R211088-06	7396-006	U
LCS (QC ID=43430)	R211088-05	7396-005	ok
Duplicate (R211088-01)	R211088-07	7396-007	ok
Nominal values and limi 200 Area Source Chara.		RDLs (ug/g)	0.10

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW :		MDA Ug/g	ALIQ g		DILU- TION	YIELD %			 		PREPARED	ANAL - YZED	DETECTOR
Preparation batch 7052-07	79 2 <i>o</i> rpi	rep err	or 9.0	% R	eference	Lab	Notebool	c 7052	pg.	079					
B15YL7	R211088-01		I	0.005	0.100							35	12/19/02	12/19	KPA-001
BLK (QC ID=43431)	R211088-06		(0.005	0.100								12/19/02	12/19	KPA-001
LCS (QC ID=43430)	R211088-05		1	0.045	0.100								12/19/02	12/19	KPA-001
Duplicate (R211088-01) (QC ID=43432)	R211088-07		ĺ	0.005	0.100							35	12/19/02	12/19	KPA-001
Nominal values and limits	from metho	 od		0.10	0.100							180			

	PROCEDURES	REFERENCE	UTOT_KPA
		CP-060	Soil Preparation, rev 4
		CP-070	Soil Dissolution, < 1.0g Aliquot, rev 5
		CP-044	Sample Preparation for Total Uranium by Kinetic
			Phosphorimetry, rev 4
		CP-928	Total Uranium by Kinetic Phosphorimetry, rev 5
ŀ			

AVERAGES ± 2 SD MDA _______ ± ______ ± _______
FOR 4 SAMPLES YIELD ______ ± ______

METHOD SUMMARIES
Page 9
SUMMARY DATA SECTION
Page 26

Lab id <u>EBRLNE</u>

Protocol <u>Hanford</u>

Version <u>Ver 1.0</u>

Form <u>DVD-CMS</u>

Version <u>3.06</u>

Report date <u>01/20/03</u>

SAMPLE DELIVERY GROUP H1977

Test C Matrix SOLID

SDG 7396

Contact Melissa C, Mannion

METHOD SUMMARY CARBON 14 IN SOIL LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1977

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW SUF- TEST FIX		Carbo	14	
Preparation batch 7052-	079					
B15YL7	R211088-01		7396-001	u	·	
BLK (QC ID=43470)	R211088-03		7396-003	U		
LCS (QC ID=43469)	R211088-02		7396-002	ok		
Duplicate (R211088-01)	R211088-04		7396-004	-	U	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE	1D	RAW TEST		MD/ pCi/s		PREP	DILU-	YIELD %			FWHM keV		PREPARED	ANAL- YZED	DETECTOR
Preparation batch 7052-0)79	2 <i>σ</i> pr	ep er	or 1	0.0 %	Reference	Lab	Notebool	7052	pg.	079					
B15YL7	R21108	8-01			3.0	0.334			100		100		39	12/23/02	12/23	L\$C-006
BLK (QC ID=43470)	R21108	B-03			3.1	0.334			100		100			12/23/02	12/23	LSC-006
LC\$ (QC ID=43469)	R21108	B-02			4.3	0.334			100		44			12/23/02	12/24	LSC-006
Duplicate (R211088-01) (QC ID=43471)	R21108	8-04			2.8	0.350			100		100		40	12/23/02	12/24	LSC-006
Nominal values and limit	s from 1	netho	d		50	0.334		·····			50	•••	 180	"		

PROCEDURES	REFERENCE CP-251	C14_COX_LSC Tritium/Carbon-14 Oxidation, rev 5

				
AVERAGES ± 2 SD	MDA	<u>3.3</u>	±	1.4
FOR 4 SAMPLES	YIELD	100	±	0

METHOD SUMMARIES

Page 10

SUMMARY DATA SECTION

Page 27

SAMPLE DELIVERY GROUP H1977

SDG <u>7396</u> Contact Melissa C. Mannion

REPORT GUIDE

Client <u>Hanford</u>
Contract <u>No. 630</u>
Case no <u>SDG H1977</u>

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

- * LAB SAMPLE ID is the lab's primary identification for a sample.
- * DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.
- * CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.
- * QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.
 - QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.
- * All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

REPORT GUIDES
Page 1
SUMMARY DATA SECTION
Page 28

SAMPLE DELIVERY GROUP H1977

SDG 7396
Contact Melissa C. Mannion

REPORT GUIDE

Clie	ent	Hani	ford	 	
Contra					
Case	no	SDG	H1977		

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

- * The preparation batches are shown in the same order as the Method Summary Reports are printed.
- * Only analyses of planchets relevant to the SDG are included.
- * Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.
- * The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

These qualifiers should be reviewed as follows:

- X Some data has been manually entered or modified. Transcription errors are possible.
- P One or more results are 'preliminary'. The data is not ready for final reporting.
- 2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

REPORT GUIDES
Page 2
SUMMARY DATA SECTION
Page 29

SAMPLE DELIVERY GROUP H1977

SDG 7396
Contact Melissa C. Mannion

REPORT GUIDE

Clie	ent	Han:	ford	
Contra	act	No.	630	
Case	no	SDG	H1977	

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

- * TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.
- * SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.
- * The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.
- * PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.
- * For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.
- * The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

Page 3
SUMMARY DATA SECTION
Page 30

SAMPLE DELIVERY GROUP H1977

SDG 7396
Contact Melissa C. Mannion

REPORT GUIDE

Client <u>Hanford</u>
Contract <u>No. 630</u>
Case no <u>SDG H1977</u>

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

- * TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.
- * The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

- * ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.
- * A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.
- * When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

REPORT GUIDES
Page 4
SUMMARY DATA SECTION
Page 31

SAMPLE DELIVERY GROUP H1977

SDG 7396
Contact Melissa C. Mannion

GUIDE, cont.

Client	Han:	ford	_	
Contract	No.	630		
Case no	SDG	H1977		

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

- J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.
- B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

- L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.
- H Similar to 'L' except the recovery was high.
- P The RESULT is 'preliminary'.
- X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.
- 2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

REPORT GUIDES
Page 5
SUMMARY DATA SECTION
Page 32

SAMPLE DELIVERY GROUP H1977

SDG <u>7396</u> Contact <u>Melissa C. Mannion</u>

GUIDE, cont.

Client	Hani	ford	
Contract	No.	630	
Case no	SDG	H1977	

DATA SHEET

- * An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.
- * A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.
- * When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

REPORT GUIDES
Page 6
SUMMARY DATA SECTION
Page 33

SAMPLE DELIVERY GROUP H1977

SDG 7396
Contact Melissa C. Mannion

REPORT GUIDE

Client	<u>Han:</u>	ford	
Contract	No.	630	
Case no	SDG	H1977	

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

- * All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.
- * An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 - 1. The error of RESULT, including that introduced by rounding the result prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

- 2. The error of ADDED.
- 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits for the recovery.
- * The recovery is underlined if it is outside either of these ranges.

REPORT GUIDES
Page 7
SUMMARY DATA SECTION
Page 34

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0

Form DVD-RG

Version 3.06

Report date <u>01/20/03</u>

SAMPLE DELIVERY GROUP H1977

SDG 7396
Contact Melissa C. Mannion

REPORT GUIDE

Client <u>Hanford</u>
Contract <u>No. 630</u>
Case no SDG H1977

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

This value reported for this limit is at most 999.

- * The second limit for the RPD is the larger of:
 - 1. A fixed percentage specified in the protocol.

REPORT GUIDES

Page 8

SUMMARY DATA SECTION

Page 35

SAMPLE DELIVERY GROUP H1977

SDG 7396 Contact Melissa C. Mannion

GUIDE, cont.

Client	Hanford	
Contract	No. 630	
Case no	SDG H1977	

DUPLICATE

- 2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.
- * The RPD is underlined if it is greater than either limit.
- * If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

REPORT GUIDES
Page 9
SUMMARY DATA SECTION
Page 36

SAMPLE DELIVERY GROUP H1977

SDG 7396
Contact Melissa C. Mannion

REPORT GUIDE

Client <u>Hanford</u>
Contract <u>No. 630</u>
Case no <u>SDG H1977</u>

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

- * REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.
- * The first, computed limits for the recovery reflect:
 - The errors of the two RESULTs, including those introduced by rounding them prior to printing.

If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

- 2. The error of ADDED.
- 3. A lab specified, per analyte bias. The bias changes the center of the computed limits.
- * The second limits are protocol defined upper and lower QC limits

REPORT GUIDES

Page 10

SUMMARY DATA SECTION

Page 37

SAMPLE DELIVERY GROUP H1977

SDG 7396
Contact Melissa C. Mannion

GUIDE, cont.

Client	Han:	ford	
Contract	No.	630	
Case no	SDG	H1977	

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

REPORT GUIDES
Page 11
SUMMARY DATA SECTION
Page 38

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06

Report date 01/20/03

SAMPLE DELIVERY GROUP H1977

SDG 7396 Contact <u>Melissa C. Mannion</u>

REPORT GUIDE

Client <u>Hanford</u>
Contract <u>No. 630</u>
Case no <u>SDG H1977</u>

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

The J and X flags are as on the data sheet.

- * Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.
- * Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

REPORT GUIDES
Page 12
SUMMARY DATA SECTION
Page 39

SAMPLE DELIVERY GROUP H1977

SDG 7396 Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H1977

METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

- * Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.
- * If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

MDAs are underlined if greater than the printed RDL.

- * Aliquots are underlined if less than the nominal value specified for the method.
- * Prepareation factors are underlined if greater than the nominal value specified for the method.
- * Dilution factors are underlined if greater than the nominal value specified for the method.
- * Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.
- * Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.
- * Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

REPORT GUIDES
Page 13
SUMMARY DATA SECTION
Page 40

SAMPLE DELIVERY GROUP H1977

SDG 7396
Contact Melissa C. Mannion

GUIDE, cont.

Client <u>Hanford</u>
Contract <u>No. 630</u>
Case no <u>SDG H1977</u>

METHOD SUMMARY

- * Count times are underlined if less than the nominal value specified for the method.
- * Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.
- * Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.
- * Days Held are underlined if greater than the holding time specified in the protocol.
- * Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1 \div 3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

REPORT GUIDES

Page 14
SUMMARY DATA SECTION

Page 41

SAMPLE DELIVERY GROUP H1977

SDG <u>7396</u> Contact <u>Melissa C. Mannion</u>

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG H1977

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

REPORT GUIDES
Page 15
SUMMARY DATA SECTION
Page 42

Lab id EBRLNE
Protocol Hanford
Version Ver 1 0

Version <u>Ver 1.0</u>
Form <u>DVD-RG</u>

Version 3.06

Report date <u>01/20/03</u>

FH-Central Plates	u Project	CI	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST F03-005-011 Page									Page 1	of <u>I</u>	
Collector P. Nielson		Compa	nny Contact	Telephor 373-58	e No.				Coordinator	Price Code	8N	Data Tur	naround	
Project Designation	ation 200-CS ² 1 OU - Waste Man	Sampl SP-	ing Location	41977	$\overline{}$	396)		SAF No. F03-005	=	Air Qual	ity 📋	45 Days		
Ice Chest No. ERC	76 035	Field I	orbook No. -N-3251		COA 117514	Method of Shipment Federal Express				<u> </u>	·			
Shipped To EBERLINE SERVICES (For	merly TMA)	Offsite	Property No.	030	05/			Bill of I	Lading/Air Bil	INO. 3E	EOSP	°c.		
POSSIBLE SAMPLE HAZA														
			Preservation	Cool 4C	Cool 4	C Cool 4C	Cool	4C 1	None No	x Nogé	None	None		
 Special Handling and/or S	Storage		Type of Container	ag	aG	a.G	aC		ag ag			a6/	N 11/13/02	
	-		No. of Container(s)	1	. 1	1	<u>'</u>		1	1	1	1		
		<u></u>	Volume	60g 60m1	250g 250 d	' . l . "	250 1 750	٠ ١	125g 500	nl 60m	1 lower	500g		
	•			VOA - 8260A (TCL)	See item (Specia	Glycols, &	PCBs-	s	tem (2) in Sec item pecial Spec	ini 9045	Special	Technolium-		
	SAMPLE ANALYSIS				Instruction	ons. Retones - 8015M (Ad on) {1-	4 1	02	tractions. Instruc	tions.	Instructions.	99; Trilium - 143]	
						Propunol, Ethanol	1/110	'				الماديا	3102	
Sample No.	Matrix * Sar	ple Date	Sample Time				1							
B15YL7	SOIL 11-	14-02	0939	χ	Y /	/ X	Х		ХY	. <u>X</u>	Λ.			
	<u> </u>			ļ	<u>/. </u>		↓					<u> </u>		
		· · · · · · · · · · · · · · · · · · ·		/	<u> </u>		╁┈					₩	<u> </u>	
			 -	/			+-	-		_	- -	/		
CHAIN OF POSSESSIO	DN	Sign/Prin	t Names	<u> </u>	SI	PECIAL INST	RUCTIO	DNS	L	<u></u>	<u> </u>	<u></u>	Matrix *	
Bringuisted By Demoted From USO		ved By/Stor	red in Da	ue/Time 37 4-02			see SAF for specific sampling instructions. S=Soil SE=Soding							
Relinquished By/Removed From		ived By/Stor		ite/Time					butyl phosphate); Arsenic, Barium, C		nge – WTPH-D niwn, Lead, Salenio	en, Silver);	SO-Solid SI-Shadge	
SIGNIENTALL	1100 0										h, Boron, Calcium, Thallium, Vanadiu		W = Water	
Relinquished By/Removed From R&F 1B 1/18 02	Date/Time Rece	ived By/Stor	14 de 11 18	ete/Time		dercury - 747i -	(CV); Chro	mium Hex	- 7196	•	fate); NO2/NO3 -		A=Air DS=Dn== Solids	
Relinquished By/Removed From		ived By/Stor		te/Time		manonia - 350.3	Sulfides -	9030; Total	Cyanide - 9010	•	•		DL=Drew Liquids T=Tissue S/In-Wine	
SIGALE SISTELL 11		50 E	×		i	54, Europium-15	i5); Gamm	a Spec - Ad	ld-on (Americium	-241, Antimony	t-60, Europium-15: -125, Barium-133,	Cesium-134,	L=Liquid V=Vegetation	
Relinquished By/Removed From	Date/Time Rece	ived By/Stor	· .	ute/Time タクレダー	3 Ca 1	sotopic Uranium;	Strontium	-89,90 To	otal Sr; Carbon-14	; Neptunium-23	opic Thorium {The 7; Total Uranium; .		X=Other	
Relinquished By/Removed From		ived By/Stor	red in D	ute/Time	2	41; Americium-2	41/Curium	-244 (Add-c	on) (Curium-242) Personnel n					
LABORATORY Received By SECTION	<u></u> y			Tit	ic	Personnel not available to relinquish samples from the Ref # 13 on 1/ 1/8/				the 3728	3728 Date/Time			
FINAL SAMPLE Disposal Me	ethod					Dis	posed By	***************************************				Date/Time		

Richmond, CA Laboratory

SAMPLE RECEIPT CHECKLIST

			SAMPLE	RECEIPT				
Client:	- Fh.	or Konjor	EE	Date/Ti	ime receive	d 11/19	1229	.35
) }		3-005-011			•	•		
11		_						
Contai	ner I.D. No. C	RC96035			43 P	.U. Receive	ed Yes	[] No [']
	_			CTION				
1.		Is on shipping co			Yes [\scales]	No [-	N/A []
2.		ls on shipping co			,	No [N/A []
∄3.	, -	is on sample con			Yes M		1	N/A [·]
4.		ls on sample con	tainers dated	& signed?	Yes [🎾]	No [1	N/A []
5.	Packing mat			,	Wet[]	Dry (_/)	
6.		amples in shippin			 -			
7.	Number of c	ontainers per san	aple:			c)	
8.	•	grees with sampl			Yes [No [-	
9.	Samples hav	ve: Tape [] Ha	zard labels [] Rad lab	els [[′]] App	propriate sa	ample lat	els 🍋
10.	Samples are	: In good condi	tion () Les	aking[]	Broken Co	ontainer [1 Miss	ing []
11.	Describe any	/ anomalies:					·	·
								
			· · · · · · · · · · · · · · · · · · ·	·				
13.	Was P.M. n	otified of any and				Date		·
14.	Received by		<u> </u>	Date:	11/19/12	Time:	9:35	on
Custom	er Sample	U		Custome	Sample			
	No.	cpm mr/hr	eqiw	No		cpm	mr/hr	wipe
								·
			·					
		· · · · · · · · · · · · · · · · · · ·						
								-
								 -
								~
<u>·</u>								
ion Chai	mber Ser. No.			Calibratio	n date	···-		_
Alpha m	eter Ser. No.			Calibratio	n date			
Survey l	Meter Ser. No.			Calibratio	n date			

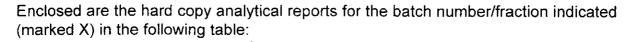


27 December 2002

Mr. Steve Trent Fluor Hanford Inc. 825 Jadwin Ave. Richland, WA 99352

Subject: Contract No. 630
Analytical Data Package

Dear Mr. Trent:



LvLl Batch #	0211L177
SDG #	H1977
SAF#	F03-005
Date Received	11-19-02
# Samples	1
Matrix	Soil
Volatiles	Х
Semivolatiles	X
Pest/PCB	Χ
DRO/GRO	Х
GC Scan	Χ
Metals	Χ
Inorganics	Χ

The electronic data deliverable (EDD) will be emailed shortly. If you have any equestions, please don't hesitate to contact me at (610) 280-3012.

\$incerely,

Lionville Laboratory Incorporated

Örlette S. John¥on Project Manager

r:\group\pm\orlette\tnu-hanford\data\fc_ltrs.doc

Lionville Laboratory, Inc. VOA ANALYTICAL DATA PACKAGE FOR TNUHANFORD F03-005 H1977

RFW LOT # :0211L177

CLIENT ID	RFW #	MTX	PREP #	COLLECTN	DATE REC	EXT/PREP	ANALYSIS
B15YL7	001	s	02LVX657	11/14/02	11/19/02	n/a	11/21/02
B15YL7	001 MS	s	02LVX657	11/14/02	11/19/02	N/A	11/21/02
B15YL7	001 MSD	S	02LVX657	11/14/02	11/19/02	N/A	11/21/02
LAB QC:							
VBLKZS	MB1	s	02LVX657	n/A	N/A	N/A	11/21/02
VBLKZS	MB1 BS	s	02LVX657	N/A	n/A	n/a	11/21/02





Client: TNU-HANFORD F03-005

LVL #: 0211L177

SDG/SAF #: H1977/F03-005

W.O. #: 11343-606-001-9999-00

Date Received: 11-19-2002

GC/MS VOLATILE

One (1) soil sample was collected on 11-14-2002.

The sample and its associated QC samples were analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8260B for TCL volatile target compounds on 11-21-2002.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from a sample that met LvLI's sample acceptance policy with the exception of a discrepancy, which has been recorded on the Sample Receipt Checklist (p-11).
- 2. The required holding time for analysis was met.
- 3. Non-target compounds were not detected in the sample.
- 4. All surrogate recoveries were within EPA QC limits.
- 5. All matrix spike recoveries were within EPA QC limits.
- 6. All blank spike recoveries were within EPA QC limits.
- 7. The method blank contained the common laboratory contaminant Methylene Chloride at a level less than the CRQL.
- 8. Internal standard area and retention time criteria were met.
- 9. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

J. Michael Taylor

Date

President

Lionville Laboratory Incorporated

Well

som\group\data\voa\tnu-hanford\0211-177.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 1 pages.

GLOSSARY OF VOA DATA

DATA QUALIFIERS

- U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E = indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D = Identifies all compounds identified in an analysis at a secondary dilution factor.
- 1 = interference.
- NQ = Result qualitatively confirmed but not able to quantify.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y = Additional qualifiers used as required are explained in the case narrative.



GLOSSARY OF VOA DATA

ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions
		and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.



TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quantitation modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quantitation modifications:

- MP Missed Peak: manually added peak not found by automatic quantitation program.
- PA Peak Assignment: quantitation report was changed to reflect correct peak assignment.
- RI Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

L-WI-035/a-mi-10/00



Lionville Laboratory, Inc.

Volatiles by GC/MS, HSL List

Client: TNUHANFORD F03-005 H1977 Work Order: 11343606001 Page: 1a

Report Date: 12/09/02 22:37

RFW Batch Number: 0211L177 VBLKZS BS B15YL7 B15YL7 B15YL7 VBLKZS Cust ID: 001 MSD 02LVX657-MB1 02LVX657-MB1 001 001 MS RFW# : Sample SOIL SOIL SOTT SOIL SOIL Information Matrix. 1.00 1.00 1.11 1.06 0.980 D.F.: ug/Kg uq/Kq Units: uq/Kq ug/Kg uq/Kq 옿 왛 Toluene-d8 102 윻 98 ş 97 왐 94 ¥ 95 왍 98 왉 100 Bromofluorobenzene 104 Surrogate ş 106 r 104 103 1.2-Dichloroethane-d4 Recovery 10 U 10 U IJ 12 Chloromethane 10 U 10 ປັ 10 U 11 II 12 U Bromomethane _____ 10 U 10 U 12 U 10 U Vinyl Chloride 11 [7 10 II 12 II 11 U 10 U 10 II Chloroethane IJ 6 U 5 U 2 J 14 B Methylene Chloride_____ 10 U 10 II 10 17 11 U 12 II Acetone TT Ħ 6 U 5 U 5 U Carbon Disulfide 옿 91 U 92 8 1,1-Dichloroethene 1.1-Dichloroethane_____ 11 6 IJ 5 U TT 5 U ťΤ 1,2-Dichloroethene (total)_____ U 6 П 5 U Ħ IJ IJ Chloroform 5 U 5 II 5 IJ 6 U 1,2-Dichloroethane 6 17 2-Butanone П 11 U 10 U 10 U 10 U 12 5 U U 1,1,1-Trichloroethane____ 6 Ħ 6 IJ 5 U 5 U IJ TT IJ Carbon Tetrachloride_____ 5 U 5 II IJ Bromodichloromethane_____ Ħ TT 6 5 U 5 U U U 1,2-Dichloropropane_____ ΤŢ 5 U 5 6 П 6 U 5 U U cis-1,3-Dichloropropene____ 5 U 114 ¥ 6 П 118 117 Trichloroethene 6 U 5 U 5 U TT 6 TT Dibromochloromethane_____ 5 U 5 5 U U U 6 U 1.1.2-Trichloroethane 102 왐 100 왓 6 U 104 8 Benzene U Trans-1,3-Dichloropropene 6 П 6 U 5 U 5 5 U 5 U 5 U 6 Ħ 6 U Bromoform _____ 10 U 10 17 10 U 4-Methyl-2-pentanone 12 IJ 11 U 2-Hexanone 11 U 10 U 10 [] 10 IJ 12 U 5 U 5 U Tetrachloroethene _____ 6 IJ 6 U 5 U 6 U 5 U 5 U 5 IJ 1.1.2.2-Tetrachloroethane Ü 6 Toluene____ 101 ٩ 6 U 106 107

*= Outside of EPA CLP QC limits.

RFW Batch Number: 02	11L177 Clie	nt: TNUHANFORD	F03-005 H1977	Work Orde	r: 11343606001		_	
	Cust ID:	B15YL7	B15YL7	B15YL7	VBLKZS	VBLKZS BS		
	RFW#:	001	001 MS	001 MSD	02LVX657-MB1	02LVX657-MB1		
Chlorobenzene		6 U	105 %	104 %	5 U	101 %		
Ethylbenzene		~ 6 U	6 U	5 U	5 U	_ 5 U		
Styrene		. 6 U	6 U	5 U	5 U	5 ซ		
Xylene (total)		6 U	6 U	5 U	5 บี	5 U		

^{*=} Outside of EPA CLP QC limits.

Lionville Labora	atory L	Ise Only	Custo	ody ⁻	[ran:	Ste	er t	1ec	orwi	au i	1 T W	78 83		~	 -		•							_	_
02116	\~ 7 ~	, }	1	FIELD PI	ERSONN	(EL:	COM	PLETE	ONLY S	HADED	ARE	^			_								SNIOLE	VSOF ATO	e i N
LUBITE	- 1 (<u></u>									<u>, A</u>	<u> B</u>	ے		D			E		F.	7				
Client Thi	1	lanford	Fo	3-095				Retriger	rator #		1	4	4		L			4		14	7	ļ		٧	\sim
Est. Final Proj	. Samı	oling Date						#/Type (Container	Liquits									-			 		1	
Project #		343-606	- 001-9	999-0	0		{			Solid	بما	, los	lac.		lay			يت		lag	130	Super A			1
Project Contac	cVPho	ne #					}	Volume		Liquid										4					
Lionville Laboratory Project Manager Or Lette Jahran					Solid	60	920	1350		60			170		500	UO.									
oc 26c	<u>-</u>	Del S-	(i) TAT	3445	<u>صبح</u>			Presen	ratives		1-	1-	<u> </u>		<u> </u>		\	. مین	i i		-			1	•
					. <u> </u>			ANALY			-		ANIC	1 2	187				ORG	<u> </u>					
Date Rec'd 11-19-02 Date Due 12-19-02			REQUE	STED		18) R	100	Ferb for	A Cook	7		7 <u>\$</u> ₹	3	ع عند	王									
		etrix]						1		Lionvil	le Lab	orat	ory U	se Oni	<u>y</u>	+	<u> </u>	<u> </u>	ــــــــــــــــــــــــــــــــــــــ					
CODES:	Carb ID	}	Client (D/Des	cription		Ch	oseu SC	Metrix	Date	Time	エス	ه خ		}	,	Γ		C) A		9			Γ	Γ	T
SE - Sediment SO - Solid		'				(1)		Collected		Collected	290	0625 X	OPCB	l	OGES			0,00	ł	INOR 4	15	<u> </u>	İ	1	
SL - Sludge		 				+	MSD			}	 _		10	<u> </u>	 	 		E,	<u> </u>	H	14		<u> </u>	<u> </u>	<u></u>
O- OI A- Air	$\infty \tau$	B15	YLT			X	X_	5	11-14-02	0938	X	X	X	ļ	X			<u>X</u> _	<u> </u>	人人	X	<u> </u>	<u> </u>	<u> </u>	
DS - Drum Solids		 				 	 -		ļ	 	 	┼	 		 	 	f		Ļ.	 	 		<u> </u>	ļ	<u> </u>
DL - Drum		 			·	 				<u></u>	 	 	 		 					 	<u> </u>	 			<u> </u>
Liquide L EP/TCLP						ļ			-			<u> </u>	-		<u> </u>	-		- 1	<u> </u>	 	<u> </u>		<u></u>		<u> </u>
Leachste WI - Wipe			<u> </u>	· · · · · · · · · · · · · · · · · · ·								}													
X - Other F - Fish												<u> </u>									<u> </u>	<u> </u>			<u> </u>
												ļ						·			<u> </u>		ļ	سنب	<u></u>
}									<u></u>			<u> </u>			<u> </u>					 					ļ
1 1									<u> </u>	<u> </u>	<u> </u>	ļ	<u> </u>									-			<u> </u>
[<u> </u>	<u></u>		<u> </u>								<u> </u>					<u></u>
Special Instructi	ons:						DATE	REVISION ((1)	15: 1. <i>A</i> 1. B	ed (1 0	l 5.	A.	Al-E	B. B.	' B. C	a Cu.				le Labo		Use O		
1			•				1.0	<u></u>	. Fr. M	M (N. 1	l: v	, LII	17 V	<u>, , , , , , , , , , , , , , , , , , , </u>	H.	رعتا		mples Shippe	Meter.	. or		nper Resi Present		
į									•									Ha		livered .			ckage (_	
}							INOR	<u>(6 ()</u> 8	ICCL.							Croy		60.	00[re O es	کر	2) ⁽ Par	Unbrok ckage (anon∙0 Dor)uler N
								4	IN3N	2. INH	3 /	ISF	<u>)</u>	ECN	10			2)(Amblei	y rocti	alay .	3)	Present (on Sa	mple
									j									3) (Co	Receiv ndition	edin G	ood N) Unbroks		N
			•										_					1	Sample	_		•	mple(Y	•	N
				 _	,			<u>6</u>			=		-				=		perly i	Preserve	ed .	CO	C Reco	rd Pres	sent
Relinquished	- {	Received by	Date	Time	[Rell	inquis by	ned	{ F	eceived 	- ORI	ite m	Tim	• [[e Betwee sels end	K1	٠		(Y) or			on Sapa		c't
by				 	 			7051T		- PKI	UI	YML	_	COC	Record	? Y or (N		dina T	ed Withi imes		Coc			
Styl Ex		7 Hours	11-19-02	1000	∤├ -		_W/	STE		REV	R	HE	N	NOTE					((y) or		Ten	• •	13	℃
		· J	1	L	l L			<u> </u>		L	لـــــــ		[791	<u>る</u> 3	4305	074	<u>/a</u>	<u>. </u>	791	$\lambda \ge$	130	<u>503(</u>	<u> </u>	

7912 34375052/ 2.4"

FH-Central Plate	au Project	C	HAIN OF CUST	rody/s	SAMPLI	ANAL	YSIS	REQUEST	r	F0	3-005-011	Page 1	of 1
Collector P. NI C/Sor)	Comp	nny Contact e Trent	Telepho 373-5	ne No.			Project Coordi TRENT, SJ		Price Code	8N		maround
Project Designation 200 Area Source Characteri	zation 200-CS-1 OU - Wa		ing Location 1					SAF No. F03-005		Air Qualit	y 🗆	45	Days
Ice Chest No. SEE	0372	Field	Loghook No.		COA 117514ES	10	_	Method of Shir Federal Expr					9
Shipped To EBERLINE SERVICES (F.	on REU	P.A. Offsite	Property No.	030	030			Bill of Lading	Air Bill	No. 55	₹ 057	ے'	
POSSIBLE SAMPLE HAZ					1						1		
			Preservation	Cool 4C	Cool 4C	Cool 4C	Cool	4C None	Nor	re None	None 1	None	//
Special Handling and/or	Storage		Type of Container	₹G	a.G	نکه	a/G	-612 2.6	a.G		aG	as,	EN II/19/02
			No. of Container(s)	11	. 1	1	1		1	,	1	1	
			Volume	608	250g 250ml	60g	250 250	· ·	500 500	- - 4	1000	500g 5200 j	
-				VOA - \$260/ (TCL)			PCBs -			(3) in pH (Soil) -	Soc item (1) in	Nickel 63; Technolism	
	SAMPLE ANAL	YSIS		(102)	Instructions.	Ketones - 801SM (Add-		Instructions.	Imptruct		Special Instructions.	7echogium- 99; Trifium-	
]]	on) (1- Propusol,)]. ,	19 40	1. <i>T</i>	
						Bthenoi}						121/1	13/02
Sample No.	Matrix *	Sample Date	Sample Time			1 1 1 1 1 1 1 1 1 1				11.00			
B15YL7	SOIL	11-14-02	0939	<u> </u>	X.	X .	<u> </u>	<u> </u>	X	×	+k	I <i></i>	
		·		ļ	<u> </u>	<u> </u>			<u> </u>		11-	/	<u> </u>
		·			<u> </u>		 		-			 /	<u> </u>
				 	}	 -					 /	/	
CHAIN OF POSSESSI	ON	Sign/Prin	Names	<u> </u>	SPEC	CIAL INSTR		NS	1			<u></u>	Matrix *
BOWLEN PRINCES	Date/Time 1370	Received By/Stor	ed In De	Ate/Time 3	20 "P			c sampling instructi	CHES.				S-Soil
Relinquished By/Removed From	Date/Time	RCF# Received By/Stor		(4-02 Ne/Time	(1) S (2) I	iemi-VOA — 82 CP Metals - 60	270A (Add 10A (Sup	d-On) (Tributyl pho entrace) (Arsenic, E	sphate); ' larium, Ci	TPH-Diesel Range Idmium, Chromius	e - WTPH-D m, Lead, Seleniu	m, Silver};	SB-Sediment SO-Selid SI-Sludge
STORICALAR	11/802 1/00	0						ce Add-On) (Alum Molybdenum, Nic					W = Water O=Oil
Relinquished By/Removed From	Date/Time	Received By/Stor		nte/Time	Merc	ury - 7471 - (C	V); Chror	nium Hex - 7196	•		-	•	AAir DS-Drum Solids
REF 13 1/1802	1/80	5JGAU		02 //				ide, Fluoride, Nitrat 030; Total Cyanide		Phosphate, Sultat	ie); NUZ/NU3 - 1	353.2;	DL=Drum Liquids T=Tissue
Retinquished By/Removed From SUGALE SUFFEL ((1502 1100	Received By/Stor		ile/) line	(4) (iross Alpha; Gr	ross Beta;	Gamma Spectrosco Spec - Add-on (An	py (Cesii				WI-Wipe L-Liquid
Relinquished By Kemoved Erom	Date/Time 11-19-02-0910	Received By/Stor	17 12-03	OS 1 D	Radia	ım-226, Radius	n-228, So	dium-22, Tin-126); 19,90 — Total Sr, Ca	Isotopic I	Plutonium; Isotopi	ic Thorium (Thor	rium-232};	V-Vegetation X-Other
Relinquished By/Removed From	Date/Time	Received By/Ston		ite/Time	241; 7			244 (Add-on) (Curi	am-242 j				1
		_ <u> </u>						- Perso	anci noi	available to			<u> </u>
LABORATORY Received B SECTION	у			Ti	ile			Ref#	LB_	mples from the	: 3728 D: <u>' 0</u> 2	ate/Time	
FINAL SAMPLE Disposal M DISPOSITION	(ethod					Dispo	sed By				D	ate/Time	<u> </u>

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

CLIENT: Thu Hanford

³urchase Order/Project:

DATE: 11.19.03-

SAF# SOW# / Release #: FO3-005

Laboratory SDG #:

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION Custody seals on coolers or shipping D No DN/A ☐ see Comment # container intact, signed and dated? Outside of coolers or shipping containers are □ No DNA ☐ see Comment # free from damage? Airbill # recorded? □ No D N/A ☐ see Comment # All expected paperwork received (coc and other client specific: historical data. □ No ☐ see Comment # alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid) 5. Sample containers are intact? Q^Yes D No D N/A ☐ see Comment # Custody seals on sample containers intact, □ No D N/A see Comment # signed and dated? All samples on coc received? O No ☐ see Comment # All sample label information matches coc? □ No D N/A D see Comment # Laboratory QC samples designated on coc? □ No D N/A ace Comment # (QC stickers placed on bottles?) 119.02 10. Shipment meets LvLl Sample Acceptance)⊠(No □ N/A Policy? (identify all bottles not within see Comment # policy. See reverse side for policy) 11. Where applicable, bar code labels are □ Yes □ No ☐ see Comment # affixed to coc? □ No D N/A 12. coc signed and dated? See Comment # 13. coc will be faxed or emailed to client? D No D N/A Sec Comment # 14. Project Manager/Client contacted ☐ Yes □ No concerning discrepancies? (name/date) D N/A See Comment #

Cooler # / temp (°C) and Comments:

ERC 99-058/14.30C

ERC FS-002/2.4°C ERC 99.055/21°C

Laboratory Sample Custodian:

Laboratory Project Manager:

#1 Cooler ERC 99.058= 14.3"

Lionville Laboratory, Inc. BNA ANALYTICAL DATA PACKAGE FOR TNUHANFORD F03-005 H1977

DATE RECEIVED: 11/19/02 LVL LOT # :0211L177

CLIENT ID	TAT	#	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
							
B15YL7	001		s	02LE1384	11/14/02	11/21/02	12/05/02
B15YL7	001	MS	S	02LE1384	11/14/02	11/21/02	12/05/02
B15YL7	001	MSD	S	02LE1384	11/14/02	11/21/02	12/05/02
LAB QC:							,
SBLKIL SBLKIL	MB1 MB1	BS	s s	02LE1384 02LE1384	N/A N/A	11/21/02 11/21/02	11/23/02 11/23/02





Client: TNU-HANFORD F03-005

LVL#: 0211L177

SDG/SAF #: H1977/F03-005

W.O. #: 11343-606-001-9999-00

Date Received: 11-19-2002

SEMIVOLATILE

One (1) soil sample was collected on 11-14-2002.

The sample and its associated QC samples were extracted according to Lionville Laboratory OPs based on method 3550 on 11-21-2002 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for client specified Semivolatile target compounds on 11-23-2002 and 12-05-2002.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from a sample that met LvLI's sample acceptance policy with the exception of a discrepancy, which has been recorded on the Sample Receipt Checklist (p-12).
- 2. The sample was extracted and analyzed within required holding time.
- 3. Non-target compounds were detected in the sample.
- 4. All surrogate recoveries were within EPA QC limits.
- 5. One (1) of twenty-two (22) matrix spike recoveries was outside EPA QC limits.
- 6. All blank spike recoveries were within EPA QC limits.
- 7. The method blank contained the common laboratory contaminant Bis (2-Ethylhexyl) phthalate at a level less than the CRQL.
- 8. Internal standard area criteria were not met for the sample. However; the GC/MS instrument was inspected for possible malfunction and was judged to be functioning properly and all surrogate recoveries were within QC limits; consequently, the sample was not reanalyzed.
- 9. Manual integrations are performed according to OP 21-06A-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
- 10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

J. Michael Taylor

Date

President

Lionville Laboratory Incorporated

som\gorup\data\bna\tnu-hanford-0211-177.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 2 pages.

GLOSSARY OF BNA DATA

DATA QUALIFIERS

- U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D = Identifies all compounds identified in an analysis at a secondary dilution factor.
- Interference.
- NO = Result qualitatively confirmed but not able to quantify.
- A = Indicates that a TIC is a suspected aldol-condensation product.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y = Additional qualifiers used as required are explained in the case narrative.



GLOSSARY OF BNA DATA

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.



TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

- MP Missed Peak: manually added peak not found by automatic quan program.
- PA Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.



Lionville Laboratory, Inc.

RFW Batch Number: 0211L177

Semivolatiles by GC/MS, Special List

Client: TNUHANFORD F03-005 H1977 Work Order: 11343606001

Report Date: 12/06/02 16:10

Page: la

	Cust ID:	B15YL	7	B15YL7		B15YL7		SBLKIL		SBLKIL BS		
Sample	RFW#:	003	1	001 MS	}	001 MSD		02LE1384-M	IR1	02LE1384-M	no 1	
Information	.,,	SOIL	-	SOIL		SOIL		SOIL		SOIL	ът	
	D.F.:	1.0	00	1.0	0	1.0	0	1.0	0	1.0	0	
	Units:	ug/I	Kq	ug/K		ug/K	_	ug/K	_	ug/K	-	
			_	0.	-	- 3.	_		_	-3, -	-3	
	Nitrobenzene-d5	69	8	70	ક	56	*	80	४	72		
Surrogate	2-Fluorobiphenyl	69	ક્ષ	76	*	61	왕	80	ક	78	8	
Recovery	p-Terphenyl-d14	88	ક	92	ક	84	*	100	왐	102	웋	
	Phenol-d5	72	8	68	8	57	8	84	૪	72	%	
	2-Fluorophenol	74	ક્ષ	73	왐	58	ક	83	ક	76	왐	
	2,4,6-Tribromophenol	76	ક	81	웋	67	ક	74	૪	78	*	
====±====		=======	==fl	_========	=f1	*====== =	=fl	==========	=f1	========	= f 1	======================================
Phenol		350	U	67	ક	58	૪	330	U	74	왐	
bis(2-Chlor	oethyl)ether	350	U	350	U	350	ប	330	U	330	U	
2-Chlorophe	nol	350	Ü	71	ક	59	ક	330	U	76	욯	
1,3-Dichlor	obenzene	350	U	350	U	350	U	330	U	330	U	
1,4-Dichlor	obenzene	350	U	73	용	57	옿	330	U	78	8	
1,2-Dichlor	obenzene	350	U	350	Ū	350	U	330	U	330	U	
2-Methylphe	nol	350	U	350	U	350	U	330	U	330	Ü	
2,2'-oxybis	(1-Chloropropane)	350	U	350	U	350	U	330	U	330	บ	•
3- and/or 4	-Methylphenol	350	Ü	350	Ū	350	U	330	U	330	Ü	
N-Nitroso-D	i-n-propylamine	350	U	78	8	66	왕	330	U	78	ş.	
Hexachloroe	thane	350	U	350	IJ	350	U	330	U	330	Ū	
Nitrobenzen	e	350	U	350	Ü	350	U	330	U	330	U	
Isophorone_		350	U	350	U	350	U	330	U	330	Ū	
2-Nitrophen	ol	350	U	350	Ū	350	U	330	Ū	330	Ū	
2,4-Dimethy	lphenol	350	U	350	Ü	350	U	330	U	330	U	
bis(2-Chlor	oethoxy) methane	350	U	350	U	350	U	330	U	330	U	
2,4-Dichlor	ophenol	350	U	350	U	350	U	330	บ	330	U	
1,2,4-Trich	lorobenzene	350	Ü	72	ક	61	ક	330	U	78	*	
Naphthalene		350	U	350	U	350	U	330	ט	330	U	
4-Chloroani	line	350	U	350	U	350	U	330	Ŭ	330	U	
Hexachlorob	utadiene	350	U	350	U	350	Ū	330	U	330	U	
4-Chloro-3-	methylphenol	350	U	76	8	67	冬	330	U	72	ક	
2-Methylnap	hthalene	350	Ū	350	U	350	U	330	U	330	U	1
Hexachloroc	yclopentadiene	350	U	350	U	350	U	330	U	330	U	
2,4,6-Trich	lorophenol	350	U	350	U	350	U	330	U	-330	Ū	
2,4,5-Trich		870	U	870	U	870	U	830	Ū	830	Ū	
*= Outside	of EPA CLP QC limits.									- " -	-	

350 U

330 U

330 U

330 U 330 U 330 U

330 U

330 U

330 U

Tributylphosphate _____ (1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

350 U

350 U

350 U

350 U

Indeno(1,2,3-cd)pyrene_____

Dibenzo(a,h)anthracene_____

Benzo(g,h,i)perylene____

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

	CLIENT	SAMPLE	NO.	
1-				
ļ Iz	215VI.7			

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD F03-005 H1977

Matrix: (soil/water) SOIL Lab Sample ID: 0211L177-001

Sample wt/vol: 30.0 (g/mL) G Lab File ID: A120513

Level: (low/med) LOW Date Received: 11/19/02

% Moisture: ____4 decanted: (Y/N)___ Date Extracted: 11/21/02

Concentrated Extract Volume: 1000(uL) Date Analyzed: 12/05/02

Injection Volume: 2.0 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: __7.0

Number TICs found: 5 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
	######################################	======	=======================================	=====
j 1.	ALDOL CONDENSATE	3.640	4000	JAB
2.	ALDOL CONDENSATE	3.992	40000	JAB
3.	ALDOL CONDENSATE	4.635	200	JAB
4.	ALDOL CONDENSATE	5.291	4000	JAB
5.	ALDOL CONDENSATE	6.476	700	JAB
1				

1F SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

Lab Name: Lionville Labs, Inc. Work Order: 11343606001

Client: TNUHANFORD F03-005 H1977

Matrix: (soil/water) SOIL Lab Sample ID: 02LE1384-MB1

Sample wt/vol: 30.0 (g/mL) \underline{G} Lab File ID: $\underline{D112308}$

Level: (low/med) LOW Date Received: 11/21/02

% Moisture: ____ decanted: (Y/N)__ Date Extracted: 11/21/02

Concentrated Extract Volume: 1000(uL) Date Analyzed: 11/23/02

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 5 CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg

		<u> </u>		
CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
			============	====
1.	ALDOL CONDENSATE	6.336	4000	JA
2.	ALDOL CONDENSATE	6.953	40000	JA
3.	ALDOL CONDENSATE	7.579	300	JA
4.	ALDOL CONDENSATE	8.301	4000	JA
5.	ALDOL CONDENSATE	9.614	700	JA

Lionville Laboratory Use Only Custody Iransier neculular moin ingress FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS 0211617 F03-005 client TNU Hantord Refrigerator # Liquid Est. Final Proj. Sampling Date ___ #Type Container 1143-606-001-9999-00 Solid Mould Project Contact/Phone # __ Volume Lionville Laboratory Project Manager (D) LDH & CARALYO (dal) Solid OC SPEC Del ___ 510 TAT 3045 80 **Preservatives ORGANIC** INORG **ANALYSES** Date Rec'd 11 19.02 Date Due 12-19-02 REQUESTED MATRIX Lionville Laboratory Use Only Matrix CODES: QC Lab 0825 x 9 Chosen S - Soit Date Time Client ID/Description Matrix 03 INORG(Collected Collected SE - Sediment FPH SO - Solid SL - Sludge MS MSD W - Water BIS YLT po_T 11-14-02 0939 X O-Oil A - Air DS - Drum Solide DL - Drum Liquids L - EP/TCLP Leachate WI - Wipe X - Other F - Fish DATE/REVISIONS: Lionville Laboratory Use Only Special Instructions: METO, A. Ba Cd. Cr. Pb. Se. Ag. Al. Be Bi B. Ca. Cu. Samples were/ 1) Shipped ____ or Tamper Resistant Seal was: 2 Fr. Mg, Mn. Mo, Ni, K. Nk. Tl, V, Zn, Hg 1) Presention Outer Package (Y) or N Hand Delivered ____ INORG O 3 ZCCL, IC FL, ICANS, ICANS, ICPOY ICSOY Airbill # ... 2) Unbroken on Outer see below Package (V) or N INJUZ INHAN ISFD , ZONTO 2) (Ambient or Chille) 3) Present on Sample or N 3) Received in Good Condition or N 4) Unbroken on Sample(Y) or N 4) Samples Property Preserved **COC Record Present** Received Relinquished (Y) or N Received Relinquished Discrepancies Between Upon Sample Rec't Date Samples Labels and (y) or N 5) Received Within COMPOSITE COC Record? Y or (N) Holding Times 149 Ex Wirth Temp. 14.3 °C 11.19.02 NOTES: (Y) or N 7912 3430 5074/2.1° 7912 3430 5030 7912 3437 5052/2.4"

FH-Central Plate	au Project	CI	HAIN OF CUST	ODY/S	SAM	PLE	ANALY	YSIS	RE	EQUEST		F03	-005-011	Page 1	of * <u>1</u>
Collector P. Nielson		Compa	iny Contact c Trent	Telepho 373-5	≡e No.				Pro	oiect Coordin ENT, SJ	ator	Price Code	8N		ernaround
Project Designation	ration 200-CS-1 OU - Waste M		ing Location							F No. 3-005	1	Air Quality		45	Days
In Chart Na	237C		ogbook No. -N - 3251		CO.	A 814ES1	0		Met	thed of Ships ederal Expres					
	OZ MICHYTMA) RECRA			030					Biff	l of Lading/A	ir Bill N	° 5€7	5 05	ے	
POSSIBLE SAMPLE HAZ				1	T_				•				,		A
			Preservation	Cool 4C	Co	ol 4C	Cool 4C	Cool	4C	None	None	None	None	None	Λ.,
Special Handling and/or	Storage		Type of Container	ag		₽G	ىە	a C	3	0.G	a G	8/1 4G	GR AG	6/P a.G.	KN 11/13/02
			No. of Container(s)	ì		1	1	[]	_	1	1	1	1	1	
			Volume	60g	1	50g	60g	250	-	125g	500g	60g	1000	500s	.
			ł	10001 VOA-8260		<u>کامہ (ا)</u> (1) in	60ml	PCBs.		120ml See item (2) in	500 m See item (3)		See item (4)		
	SAMPLE ANALYSIS			(ICL)	Sp	ecial actions.	Glycols, & Ketonet - 8015M (Addi- on) {1- Propanol, Bihanol}			Special Inseructions	Special Instruction	9045	Special Instructions	Technolium 99; Trilium H3	٠
Sample No.	Matrix *	Sample Date	Sample Time											114 k - Liberton	
B15YL7	\$OIL	1-14-02	0939	Х		Χ	Х	X	′	X	Y	У	k	Ш	
				<u>[</u>					<u></u>					1/	
				<u> </u>								<u> </u>	11_	₩	<u> </u>
					┷					<u> </u>			₩		J
				<u> </u>						<u> </u>			1		
CHAIN OF POSSESSI		Sign/Prin					IAL INSTR								Matrix *
Relinquished By/Removed From Relinquished By/Removed From	Din 11-14-02	REF#	1B/3728 IL	ute/Time (520	(1) Se	emi-VOA — 82 P Metals - 601	70A (Ad	dd-Onj	ce) (Arsenic, Ba	phate); TF prium. Cade	H-Diesel Range mium, Chromium	ı, Lead, Selen	nium, Silver};	S=Soil SE=Sodiment SO=Solid SI=Sludge
SIGNESTAL	11/802 1/00 0					ICP M	letals - 6010A	(Supertr	nce A	Add-On) (Alumii Achdenum Nick	um, Beryll el Potassiu	lium, Bismuth, B nn, Sodium, Tha	oron, Calciun Ilium. Vanadi	n, Copper, um. Zinc):	O=Oil
Relinquished By/Removed From	Date/Time D	ccived By/Sto	red in Da	ate/Time		Mem	rv - 7471 - (C	Vi: Chro	unium	1 Hex - 7196					A=Air DS=Drum Solids
REF 1B 111802	1/00 5	SIGHLE	Marle 11/8	02 /	100	(3) IC	, Amions - 300.	.0 (Chlo ulfides -	nac, i 9030-	Fluoride, Mitrate ; Total Cyanide :	, Natate, 11 - 9010	hosphate, Sulfate	j, noznos	* 333.2,	Di.=Drum Liquids T=Tissue
Relinquished By/Removed From	Date/Time R	cceived By/Stor	×	ate/Time		(4) G	ross Alpha; Gr uronium-1551	oss Beta : Gamma	; Gam a Snec	mma Spectroscop c - Add-on (Am	y (Cesiun encium-24	2-137, Cobalt-60, 1, Antimony-125	, Barium-133	, Cesium-134,	
Relinquished By Removed Erom	Date/Time 11-19-02-09-0		11-12-03	- Of 10		Isotop	ic Uranium; St	rontium-	89,90	n-22, Tim-126}; ;) Total Sr; Car (Add-on) {Curiu	bos-14; N	utonium; Isotopio eptunium-237; T	t nonum (11 otal Ummium;	: Americium	X=Other
Relinquished By/Removed From	Date/Time ¹ Re	eccived Bl/Stor	ed In Da	ste/Time	1		- - -		•		_	evailable to			
LABORATORY Received E	Зу			Т	itle	<u> </u>	<u> </u>			relinq	nish sam	ples from the n <u>// //8</u> /	3728 <u>0</u> 2	Date/Time	
SECTION FINAL SAMPLE Disposal M DISPOSITION	Aethod	<u> </u>					Dispo	sed By						Date/Time	

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

LIENT:	Thu	Hanford)
4			

'urchase Order/Project:

DATE: 11.19.02

SAF# SOW# / Release #:

F03-005

Laboratory SDG #:

TE:	ALL ENTRIES MARKED "NO" MUST BE	EXPLAINED I	N THE COMM	ENT SECTION	4
1.	Custody seals on coolers or shipping container intact, signed and dated?	N/Yes	□ No	O N/A	☐ see Comment #
2.	Outside of coolers or shipping containers are free from damage?	B/Yes	□ No	DN/A	□ sec Comment #
3.	Airbill # recorded?	Dyres	D No	O N/A	. See Comment #
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	ty'yes	[¯] □ No	D N/A	□ see Comment #
5.	Sample containers are intact?	Terres	□ No	D N/A	. □ see Comment #
6.	Custody seals on sample containers intact, signed and dated?	D/Yes	□ No	D N/A	D see Comment #
7.	All samples on coc received?	Yes	□ No	□ N/A	D see Comment #
8.	All sample label information matches coc?	Yes	□ No	□ N/A·	see Comment#
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	Ty Yes	□ No	□ N/A	□ see Comment #
10.	Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	7 Yes 11-19-0	2 (No	□ N/A	💆 see Comment #
11.	Where applicable, bar code labels are affixed to coc?	🗆 Yes	O No	D.N/A	☐ see Comment #
12.	coc signed and dated?	Yes	□ No	D N/A	☐ see Comment #
13.	coc will be faxed or emailed to client?	Yes	□ No	□ N/A	□ see Comment #
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	□ Yes	□ No	□ N/A	🗆 see Comment #

Cooler # / temp (°C) and Comments: ERC 99 - 058 / 14.3°C

ERC FS-002/2.4°C ERC 99-055/2-1°C

Laboratory Sample Custodian:

Laboratory Project Manager:

Cooler ERC 99.058= 14.3"

DATE RECEIVED: 11/19/02

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
					/00/00	
B15YL7	001	S	02LE1379	11/14/02	11/20/02	11/29/02
B15YL7	001 MS	S	02LE1379	11/14/02	11/20/02	11/29/02
B15YL7	001 MSD	S	02LE1379	11/14/02	11/20/02	11/29/02
LAB QC:						
						
PBLKGE PBLKGE	MB1 MB1 BS	S S	02LE1379 02LE1379	N/A N/A	11/20/02 11/20/02	11/28/02 11/28/02







Analytical Report

Client: TNU-HANFORD F03-005

W.O. #: 11343-606-001-9999-00

LVL#: 0211L177

Date Received: 11-19-02

SDG/SAF #: H1977/F03-005

PCB

One (1) soil sample was collected on 11-14-02.

The sample and its associated QC samples were extracted on 11-20-02 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 11-28,29-02. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- Please refer to the Sample Receipt Checklist for sample discrepancies in LvLI's sample 1. acceptance policy.
- 2. All required holding times for extraction and analysis have been met.
- The sample and its associated QC samples received a Sulfuric Acid cleanup. 3.
- The method blank was below the reporting limits for all target compounds. 4.
- All surrogate recoveries were within acceptance criteria. 5.
- All blank spike recoveries were within acceptance criteria. 6.
- All matrix spike recoveries were within acceptance criteria. 7.
- All initial calibrations associated with this data set were within acceptance criteria. 8.
- All continuing calibration standards analyzed prior to sample extracts were within 9. acceptance criteria.
- I certify that this sample data package is in compliance with SOW requirements, both 10. technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels 6

Laboratory Manager

Lionville Laboratory Incorporated

pef\r:\group\data\pest\tnu hanford\11L-177.pcb

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of



GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

- U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I = Interference.

ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- MSD = Indicates matrix spike duplicate.
- **DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA = Not Applicable.
- DF = Dilution Factor.
- NR = Not Required.
- SP = Indicates Spiked Compound.



GLOSSARY OF PESTICIDE/PCB DATA

- This flag is used for an PESTICIDE/PCB target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".
- D = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C = This flag applies to a compound that has been confirmed by GC/MS.

PCBs by GC

RFW Batch Number: 0211L177 Client: TNUHANFORD F03-005 H1977 Work Order: 11343606001 Page: 1 Cust ID: B15YL7 B15YL7 B15YL7 PBLKGE PBLKGE BS Sample 001 001 MS RFW#: 001 MSD 02LE1379-MB1 02LE1379-MB1 Information Matrix: SOIL SOIL SOIL SOIL SOIL D.F.: 1.00 1.00 1.00 1.00 1.00 Units: UG/KG UG/KG UG/KG UG/KG UG/KG Tetrachloro-m-xylene Surrogate: 95 왕 95 કૃ 95 웋 90 \$ 90 ş. Decachlorobiphenvl 110 115 ¥ ¥ 8 110 110 110 Aroclor-1016 U 92 왕 91 왕 35 33 U 93 옿 70 U Aroclor-1221 70 U 70 U 67 U 67 U Aroclor-1232 35 U 35 U 35 U 33 U 33 U Aroclor-1242 35 U 35 U 35 U 33 U 33 U Aroclor-1248 35 U 35 U 35 U 33 U 33 U Aroclor-1254 35 U 35 U 33 U 35 U 33 U Aroclor-1260 35 U 94 % 95 옿 33 U 93

20/5/12/ar

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

 Ω

Report Date: 12/02/02 17:31

Lionville Labor	atory l	Use Only	Cust	ody ¯	Tran	Ste	ert	1ec	Drar	up.	T U	# #%	• • •	ت	- -	-								
02111	\ 	7		FIELD P	ERSONI	NEL:	COM	PLETE	ONLY S	HADED	ARE	AS							_			V .	WOS YO	e I
USTIC	- \	<u> </u>									<u>A</u>	<u> </u>	ے		D,		E	, .	F.	بك				
Client Tn	<u>u b</u>	tantor	d Fo	3-005				Retrige	rator #		1	4	4		ŀ		+	 	4	્ય		 		
Est. Final Pro	j. Sam	pling Date _						#/Type	Conteiner	Liquid												أسا		
Project #		1343-60	6-001-9	999.00	0					Solid	بعا	Pot	لمح		lag		يط	1	lag	120				
Project Conta								Volume	,	Liquid									-		5 5		5	
Lionville Labo	oratory c						<u> </u>			Solid	8	PRD	350		60		170	1	500	UU			2	
		Del	STO TAT	3.42	garto.			Preser	vatives		_	000	ANIC	<u> </u>	-			1'	<u> </u>					kesi vi
Date Rec'd	11:1	9.03-	Date Du	. /2	-19-0	Z		ANALY	SES	-	100		TE BO	£ £	Alconto			ORG	35 (5.5)	五				
MATRIX		T				 		 	т		12	<u>a</u>	40	Ĭ	ŤŰ						<u> </u>			
CODES:	Lab	1					atrix 2C	ļ		•	┢		Ţ	T*	Γ	Lionville La	borat	ory U	T -	<u>у</u> Т	, 1	7	1	7
S - Soil SE - Sediment	10		Client ID/Det	scription			0 5 0∩ •∕}	Matrix	Date Collected	Time Collected	H 7290	0860 0860	OPCB	Ì	25		Ber (4	R.C.O	I				
SO - Solid SL - Sludge		<u> </u>				MS	MSD		<u> </u>	.	0	20	0		0665	1	E	1	INDR 4	H O H	ļ.	}	}	
	∞	BIS	5 YL7			X	X	5	11-14-02	0939	X	X	X		X		Х	;	人	X				
A - Air DS - Drum	 	ļ			-	L	[<u> </u>] 													ļ —	
Solids DL - Drum	-	·				<u> </u>			<u> </u>	••••			ļ											
Liquids L- EP/TCLP	<u> </u>	ļ	<u></u>			ļ.,,			<u> </u>	<u> </u>		<u> </u>												
Leachate WI - Wipe	L			·		<u> </u>																		
X - Other F - Fish			<u></u>	<u></u>																				
∫ !	ļ	ļ				<u> </u>		ļ										<u> </u>	<u> </u>					
		ļ	<u></u>															 			· ·			
	ļ <u>.</u>		 			ļ.,			-			<u> </u>					·	-	↓					
		<u> </u>				<u> </u>	DATE	REVISION	16.					!			<u> </u>	<u> </u>	<u> </u>			ليب		<u> </u>
Special Instruct	ions:						WE.	τ 🔇	A, B	cd, C	r. Pa	Se.	Ag	Al B	B	B, G. C.	, -		Lionyli					
									z. Fe. Me	Mn. A	lo. 1	i. K	. Nk :	R.V	Zn	. He	1)	umpies Shippe	werey	or	1) F	oper Resident Present	on Ou	ter
									ICCL.	•								ond Dei biil#_	ivered _	_		ckage (_	
					·	•	ZWOK.	<u>w</u> <u>v</u> :						ZcN.			82	لعع	بولي		Pac	Unbroke :kage C	Ø or	N
						•		4	20310	L. INH	<u> </u>	7.1	<u>۽ پ</u>		<u></u>				ntor Ch		3) F	Present	on Sau Yor	nple N
			,					!	5										ert in G	N		Unbroke		
						_		6	J				<u> </u>					Sample				nple(Y	,	į
Relinquished	T	Received	Date	Time	Rel	inquís	hed	F	Received	- 1.0m	ie	Time	\Box	Discre	pancie	s Between	- Pr	джиту і Э	Preserve	N N		C Recoi		
by		by		 		by	1100	OSIT	-by	· ORI	G II	AL		Sampl	es Lab	ets and ?Yor(R)	5) (Receive	ed Withi	n			or	N
Sted Ex	دُل	Dixtrict	11.19.02	010	1		- WA	STE	•	REN			N	NOTE			Hol	kdling 11)	mes Y) or	N	Coo Tem	xp. <u>14</u>	1.3	•c
		/J		<u> </u>										7912	<u> 3</u>	430 507	t/a	•	<u> 791</u>					

7912 3430 5052/24"

FH-Central Plateau Project Collector NICSON Project Designation 200 Area Source Characterization 200-CS-1 OU - Waste Man Ice Chest No. SEE 03 PC Shipped To EDERLINE SERVICES (Formerly TIMA) POSSIBLE SAMPLE HAZARDS/REMARKS	Compan Steve Samplin SP-1 Pield Lo	pebook No. N - 3251	Telephon 373-58	COA 117514I			Project Coording TRENT, SJ SAF No. F03-005	ator Pr	ice Code r Quality	8N	Data Tur	naround Days
200 Area Source Characterization 200-CS-1 OU - Waste Man lice Chest No. SEE 03 PC Shipped To EDERLINE SERVICES (Fermerly TMA) RECRA	SP-1 Field Lo	ogbook No. N - 3251	030	1175141	ES10		F03-005	Ai	r Quality		45	Days
Shipped To AMA 1/302 EDERIANE SERVICES (Formerly TMA) RECRA			030	1175141	ES10	- {		•				
	Offsite I	Property No.	030				Method of Ship Federal Expre					
				030			Bill of Lading/	Air Bili No.	568	057		<u></u>
Possible sample hazards/remarks		Preservation	Cool 4C	Cool 40	Cool 4C	Cool 4	IC None	None	None	None :	None	
Special Handling and/or Storage		Type of Container	ag.	aG	ىه	` a G	-G/2 	a.G	- 01 46	OP aG	6/1 R aG	N 11/13/02_
_		No. of Container(s)	1 60g	250g	60g	2501	1 g 125g	1 500-	1	1 1	1	
		Volume	bomi	2500	1 6001	250	1 120ml	500g 500ml	Gonl	1000	500d 500d	
SAMPLE ANALYSIS			VOA - 8260A (TCL)	See item (1 Special Lateraction	Glycols, &	PCBs - 1	1082 See item (2) in Special Instructions.	See item (3) in Special Instructions.	pH (Soil) - 9045	See item (4) in Special Instructions.	Nickel63; Technolism- 99; Trilium - 1/3	3 02
	ple Date	Sample Time	Ris make a comment of					<u> </u>				1.2.2
B15YL7 SOIL [[-	4-02	0939	χ	X	×	<u> X</u>	<u> </u>	<u> </u>	У	-K-	 	
				 	-		-		<u> </u>	 	 	
				<u> </u>					 	1	 	
										1		
Refinquished By/Removed From Date/Time 1371 Received From Date/Time 1371 Received From Date/Time Recei	ved By/Store	din Da	te/Time 4-02 te/Time 02 // te/Time 02 // te/Time Tit	(1) (2) (2) (3) (4) (4) (4) (2) (4) (2)) Semi-VOA - 82) ICP Metals - 6010A on, Magnesium, M. (ercury - 7471 - (C') IC Anions - 300. mmonia - 350.3; Su) Gross Alpha; Gr 54, Europium-157; adium-226, Radium otopio Uranium; Su	or specific 70A (Ad. 0A (Supertra anganese. V); Chron 0 {Chlori difides - 9 post Beta; c Gamma -228, So- contium-8	d-On) (Tributyl pheertrace) (Arsenic, Ecc Add-On) (Ahum, Molybdenum, Nicmann Hex - 7196 ide, Fluoride, Nitral 030; Total Cyanide Gamma Spectrosoc Spec - Add-on (Ardium-22, Tin-126); 19,90 — Total Sr; Ct 244 (Add-on) (Curi	ephate); TPH arium, Cadmi inum, Beryllin kel, Potassium e, Nitrite, Phot - 9010 py {Cesium-1 nericium-241, Isotopic Pluto rbon-14; Nepi am-242} anel not av. [uish sampli	am, Chromium m, Bismath, B., Sodium, Thai sphate, Sulfate 37, Cobalt-60, Antimony-125 mium, Isotopic tanium-237; Te	Lead, Selenic oron, Calcium, llium, Vanadium }; NO2/NO3 - Europium-152, Barium-133, Thorium {The stal Uranium; A	Copper, in, Zinc}; 353.2; g. Europiam-Cesium-134, srium-232};	Matrix * s-soil sE-soliment sO-solid st-slunge w = Water O-Ol A-Air DS-Drum Solids DL-Drum Liquids T=Tissue w-wipe L-Liquid V-Vegetation X-Other
FINAL SAMPLE Disposal Method DISPOSITION		<u> </u>			Dispos	ed By					Date/Time	

	LIONVILLE LABO	RATORY	INCORPO	RATED	
CLIEN	T: Thu Hanford	CEIPT C	HECKLIST		•
	se Order/Project:			DAT	TE: 11-19-02
SAF#	SOW#/Release #: F03-005				
	tory SDG #:	- ,	•		•
NOTE:	ALL ENTRIES MARKED "NO" MUST BE I	EXPLAINED I	N THE COMM	ENT SECTION	
1.	Custody seals on coolers or shipping	Q/Yes	□ No	DN/A	
	container intact, signed and dated?	7			see Comment#
2.	Outside of coolers or shipping containers are free from damage?	Evyes	□ N ₀	□ N/A	☐ see Comment #
3.	Airbill # recorded?	Dyres	□ No	D N/A	D see Comment # .
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	LY Yes	□ N ₀	. DNA	D see Comment #
5.	Sample containers are intact?	TYes	□ No	O N/A	See Comment #
6.	Custody seals on sample containers intact, signed and dated?	D/Yes	□ No	D N/A	□ see Comment #
7.	All samples on coc received?	Yes	□ No	□ N/A	see Comment#
8.	All sample label information matches coc?) y des	□ No	DN/A	see Comment#
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	Ty Yes	D No	□ N/A	☐ see Comment #
10.	Shipment meets LvLl Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	17 14 19.0	2 No	□ N/A	see Comment # (
11.	Where applicable, bar code labels are affixed to coc?	□ Yes	□ No	DNA	□ see Comment #
12.	coc signed and dated?	Dives	□ No	□ N/A	☐ see Comment #
	coc will be faxed or emailed to client?	T Yes	□ No	□ N/A	□ sec Comment #
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	□ Yes	□ No	□ N/A	🛘 see Comment #

Cooler # / temp (°C) and Comments: ERC 99 - 058 / 14.3°C

#1 Cooler ERC 99.058= 14. =

ERC FS-002/2.4% ERC 99-055/2-1°-

Laboratory Sample Custodian:

Laboratory Project Manager:



DATE RECEIVED: 11/19/02 LVL LOT # :0211L177

CLIENT ID	$\Gamma \Lambda \Gamma$	#	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B15YL7	001		s	02LE1380	11/14/02	11/20/02	11/26/02
B15YL7	001	MS	S	02LE1380	11/14/02	11/20/02	11/26/02
B15YL7	001	MSD	S	02LE1380	11/14/02	11/20/02	11/26/02
LAB QC:							
BLK	MB1		S	02LE1380	N/A	11/20/02	11/27/02
BLK	MB1	BS	S	02LE1380	N/A	11/20/02	11/27/02







Analytical Report

Client: TNU-HANFORD F03-005

LVL#: 0211L177

SDG/SAF #: H1977/F03-005

W.O. #: 11343-606-001-9999-00

Date Received: 11-19-02

DIESEL RANGE ORGANICS

One (1) soil sample was collected on 11-14-02.

The sample and its associated QC samples were extracted on 11-20-02 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 11-26,27-02. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8015B. The analysis met the intent of method WTPH-D.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

- 1. Please refer to the Sample Receipt Checklist for sample discrepancies in LvLI's sample acceptance policy.
- 2. All required holding times for extraction and analysis have been met.
- 3. The method blank was below the reporting limits for all target compounds.
- 4. All surrogate recoveries were within acceptance criteria.
- 5. The blank spike recovery was within acceptance criteria.
- 6. All matrix spike recoveries were within acceptance criteria.
- 7. All initial calibrations associated with this data set were within acceptance criteria.
- 8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
- 9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels (

Laboratory Manager

Lionville Laboratory Incorporated

pef\r:\group\data\dro\tnu hanford\11L-177.doc

/2/6/vc_ Date

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the



GLOSSARY OF DIESEL RANGE ORGANICS DATA

DATA QUALIFIERS

- U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I = Interference.

ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- MSD = Indicates matrix spike duplicate.
- **DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA = Not Applicable.
- **DF** = Dilution Factor.
- NR = Not Required.
- SP = Indicates Spiked Compound.



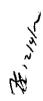
GLOSSARY OF DIESEL RANGE ORGANICS DATA

- **D** = This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- C = This flag applies to a compound that has been confirmed by GC/MS.

DIESEL RANGE ORGANICS BY GC

Client: TNUHANFORD F03-005 H1977 Work Order: 11343606001 Page: 1

	Cust ID:	B15YL7	7	B15YL	7	B15YL7	,	BLK		BLK BS		
Sample Information	RFW#: Matrix: D.F.: Units:	- 001 SOIL 1.0 mg/I	00	001 M: SOIL 1. mg/	00	001 MSE SOIL 1.0 mg/F	0	02LE1380-M SOIL 1.0 mg/K	0	02LE1380-M SOĨL 1.0 mg/K	0	
	p-Terphenyl	98	* ==fl==	109	% ==fl=:	117	* ==f1	102	* =fl	96	% =fl=	
Diesel Range Organics Kerosene	S	12.5 12.5	U	85 12.5	8	95 12.5	8	12.0	U	71 12.0	¥ U	



Report Date: 12/03/02 12:39

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC



Clear TOW Handers Fo3-005 Servicing Date 1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Lionville Labora	atory Us	se Only	Custo	ogy ira	nsie	;	ノクレィ	J1 w -					-											
Chert TOW Harters F03-005 Est. Final Proj. Sempting Date Project # Lity - 0 6 . 001-0919 . 00 Project # Lity - 0 6 . 001-0919 . 0019 Project # Lity - 0 6 . 001-0919 . 0019 Project # Lity - 0 6 . 001-0919 . 0019 Project # Lity - 0 6 . 001-0919 . 0019 Project # Lity - 0 6 . 001-0919 . 0019 Project # Lity - 0 6 . 0019 . 0019 Project # Lity - 0 6 . 0019 . 0019 Project # Lity - 0 6 . 0019 . 0019 Project # Lity - 0 6 . 0019 . 0019 Project # Lity - 0 6 . 0019 . 0019 Project # Lity - 0 6 . 0019 . 0019 Project # Lity - 0 6 . 0019 . 0019 Project # Lity - 0 6 . 0019 . 0019 Project # Lity - 0 6 . 0019 . 0019 Project # Lity - 0 6 . 0019 . 0019 Project # Lity - 0 6 . 0019 . 0019 Project # Lity - 0 6 . 0019 . 0019 Project # Lity - 0 6 . 0019 . 0019 Project # Lity - 0 6 . 0019 . 0019 Project # Lity - 0 6 . 0019 .	02116	.177			TELD PERSO	NNEL:	COM	PLETE	ONLY S	HADED	ARE	_	ر_		σ		į	E	_	E_	6		×VIIII I	BODEN FOR	11 / Y
Est. Final Proj. Sampling Date Project & II 1 9 - 6 0 6 0 01 1999 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	T20	LI i	60-70-0	EN	3-095			Retriger	rator #		<u> </u>		4		4			4		4	4				
Project Interructions Date Project Interruption (Interruption Interruption Interruption) Date Rect Date Sto YAT3015 Date Date 12-(7-02 Recolumnts Interruption I	Fet Finel Prof	Samol	ing Dete										•						-						
Project ContactPhone Sold Co Sto Co Co Sto Co Co Co Co Co Co Co	Project #	10	43-606	- 001-99	199.00		{				lag	by	Vac.						<u> </u>						
Date Rec'd 11-13-02 Date Due 12-19-02 Recording Segment Collected Collected Collected Segment	Project Contac	ctPhon	b#					Volume	1	-								70	1					 \$1.3.68	
Date Rec'd 1119-02 Date Due 12-19-02 ANALYSES ROUSETED S S S S S S S S S S S S S S S S S S S	Lionville Labo	ratory i	Project Mana	ger (J) V	otto gold	Crus		-		Solid	(<u>60</u>	920	क्रिक					140		500	w			أنستنز	
ANTRIX COODES: Service Laboratory Use Only Cheent (Drosecription) Service Collected	OC 3FC	<u> </u>	Del 57	O TAT	30 42 Ban	<u>e</u>	<u> </u>	Preserv	vatives		-			<u> </u>	١ .				} }		-				
ANTRIX COODES: Service Laboratory Use Only Cheent (Drosecription) Service Collected	Date Rec'd	11:19	٠6٥٠	Date Due	-91-51	-02				-	10	$\overline{}$		£ £	33		Ş			~ 2	F				
Special instructions: Client Ki/Drescription Colored Colored Colored	MATRIX						atriv		τ		-		1+-	1					<u> </u>		1 - 1		<u></u>	ــــــــــــــــــــــــــــــــــــــ	<u> </u>
Special Instructions: DATERISTICIONS: MI TO March March	CODES: S - Soil SE - Sediment		, •	Client ID/Desc	aiption	Che (2C 0846 v')	Matrix			エナンタ	625 X	PCB		2		$\neg \neg$	 ⊙3		Ta					
O O O A A A A A A A A A A A A A A A A A	SL - Sludge		<u> </u>				MSD		 	ļ	 		 	<u> </u>		 		= 1	-	Fig.	4	ļ			
BS - Drain Solds DL - Drain Liquids L- EPPTCLP Leachtels W1 - Vige X - Other F - Pish Special instructions: DATEREVISIONS: ME T O , M, Ba Cd, Cr, Ra, Se, Hg Al, Ba, Bi, B, Cd, X - Cr	0 - Oil	201	R12	<u>YL7</u>		_ X	X	5	11-14-02	0939	X	18	X	↓	X	-		<u>X</u> _	<u> </u>	X	X	<u>'</u>			<u> </u>
DATEREMISIONS: Liquide L. EPITCLE Liquide L. EPITCLE Liquide L. EPITCLE Liquide L. EPITCLE L. Liquide L. ELONVIlle Laboratory Use Only Samples werey 1 Samples Liquide L. Explicit L. Liquide L. L	DS - Drum		 -				 -		 		 	┿-	 	 	_				ļ	 					
Special instructions: DATEREVISIONS: MET O. H. B. Cd. Cr. Pb. Se. Mg. Ml. Be. Bi. B. Cd. Cr. Starples wery Samples wery Sample or Ato if reserved in the control of the con	DL - Drum			 		 -			 		-	 	 	 -		╂╼╾╁				 			 		
Special Instructions: DATEREVISIONS: METO 1	L - EP/TCLP											 	 -							<u> </u>		لححا	 		
Special Instructions: DATEREVISIONS: ME TO 1 M, Bq. Cd, Cr. N. Se, Hg. All, Be, Bi, B, Ca, Ce, May Samples werey 1) Shipped or 1 Samples werey 1) Shipped or 1 Shipped or	WI - Wipe				·				<u> </u>	ļ			ļ							ļ					<u> </u>
Special instructions: MET 1, Bq Cd, Cr, Bo, Se, Hg, Al, Be, Bi, B, Cd, Cd, Cd, Cd, Cd, Cd, Cd, Cd, Cd, Cd	F - Fish		<u></u>	<u> </u>								 				┞╼╼┼		لـــــــ	<u> </u>	}					
Special instructions: MET 1, Bq Cd, Cr, Bo, Se, Hg, Al, Be, Bi, B, Cd, Cd, Cd, Cd, Cd, Cd, Cd, Cd, Cd, Cd					 		ļ		<u> </u>	ļ	<u> </u>	<u> </u>]			 - -				 					
Special instructions: MET 1, Bq Cd, Cr, Bo, Se, Hg, Al, Be, Bi, B, Cd, Cd, Cd, Cd, Cd, Cd, Cd, Cd, Cd, Cd	1							 				<u> </u>	ļ			}				 					ļ
Special instructions: MET 1, Bq Cd, Cr, Bo, Se, Hg, Al, Be, Bi, B, Cd, Cd, Cd, Cd, Cd, Cd, Cd, Cd, Cd, Cd		}	···.						ļ	<u> </u>		 		<u> </u>		 -				}					
Special instructions: MET () 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	ļI	1			<u> </u>			nesector.	<u> </u>	l		<u> </u>	<u> </u>	<u>. </u>				ليح		<u> </u>	<u></u> 1	ليب	ليسيا	أحصيا	<u></u>
2 Fr. Mg. Mn. Mo. Ni. K. Nt. Tt. V. 3 h. He INORG () 3 ICCL. IC. FL. IC.NO3, IC.NO2, ICROY IC.SOY A. INJAN2, INH3N, ISF), IC.NO3 S. ICCL. TC. FL. IC.NO3, IC.NO2, ICROY IC.SOY A. INJAN2, INH3N, ISF), IC.NO3 S. ICCL. TC. FL. IC.NO3, IC.NO2, ICROY IC.SOY A. INJAN2, INH3N, ISF), IC.NO3 S. ICCL. TC. FL. IC.NO3, IC.NO2, ICROY IC.SOY A. INJAN2, INH3N, ISF), IC.NO3 S. ICCL. TC. FL. IC.NO3, IC.NO2, ICROY IC.SOY A. INJAN2, INH3N, ISF), IC.NO3 S. ICCL. TC. FL. IC.NO3, IC.NO2, ICROY IC.SOY A. INJAN2, INH3N, ISF), IC.NO3 S. ICCL. TC. FL. IC.NO3, IC.NO2, ICROY IC.SOY A. INJAN2, INH3N, ISF), IC.NO3 S. ICCL. TC. FL. IC.NO3, IC.NO2, ICROY IC.SOY A. INJANA, ISF), IC.NO3 S. ICCL. TC. FL. IC.NO3, IC.NO2, ICROY ICROY Package () or N 3) Present on Outer Package () or N 3) Present on Sample Or N 4) Samples Property Preserved COC Record Present Upon Sample Rec't Or N COC Record? Y or (N) NOTES: Yor N Temp. I4.3 °C 7912 3430 5074/2.1 7912 3430 5030	Special Instructi	ons:					WE	(()	. A. B.	cd. (1 P	. 5.	Ha	AL B	e Bo	B. 0	è.Cu.	-						<u> </u>	
INORG () 3 LCCL_IC FL ICAU3, ICAU3, ICAU3, ICAU4 A TABLE AND ISFD, ECAU3 A TABLE AND ISFD, ECAU3 A TABLE AND ISFD, ECAU3 Bellinquished by Date Time by Date by Dat									M.	M. 1	M. 1	l: K	AL.	11 V	. Z.	. Н.		Sa 1)	mpies Shippe	werez	or or	1) (Present	on Ou	<i>iter</i>
A. INISNI, INHIN ISFD, ZCNIO 4. INISNI, INHIN ISFD, ZCNIO 5. Sample 6. Sample 7. Package (*) or N 3) Present on Sample 9. Or N 4) Unbrosson on 4) Sample (*) or N 4) Sample 9. Or N 4) Sample 9. Or N 4) Unbrosson on 4) Sample 9. Or N 4) Sample 9. Or N 4) Unbrosson on 5) Received Within 4) Or N 4) Sample 10. Or N 4) Sample 10. Or N 4) Sample 10. Or N 4) Unbrosson on 5) Received Within COC Record? Y or (N) NOTES: 11. Or N 12. Or N 13. Or N 14. Or N 15. Or N 16. Or N 17. Or N 18. Or N 19. Or N 1									7	•								Ha	nd Def	ivered .					
A. TABLE TIME Samples Sample Y or N 4) Unbroken on Sample Or N 4) Samples Sample Y or N 4) Unbroken on Sample Froperty Preserved by Date Time Discrepancies Between Samples Labels and COC Record? Y or N Discrepancies Between Samples Labels and COC Record? Y or N Holding Times Or N Cooler Temp. 14.3 °C Table Time To N Temp. 14.3 °C Table Time To N Temp. 14.3 °C Table Time Table Time To N Table Time Table Time To N Table Time Table Time To N T	}				,		INOR				-					CJUY		KQ1	Rel	מעא	<u>کر</u>	2)t Pax	JNDroke :kaga (ynonu Dor	N.
Relinquished Received by Date Time Belinquished by Date Time Condition() or N A) Unbroken on A) Samples COC Record Present COC Record Present Discrepancies Between Samples Labels and COC Record? Y or N Holding Times Cooler Temp. 14.3 °C Temp. 14.3 °C Temp. 14.3 °C	İ							4	4. INSN	Z. INH	3 N	ISP	<u>.b</u> "	ECN	70									On Ser	mple
Relinquished by Date Time by Date Time by Date Time by Date Time by Discrepancies Between Sample Y or N COMMOSTE PEWRITTEN 4) Samples Sample Y or N Property Preserved COC Record Present Upon Sample Rec't Samples Sample Y or N COC Record Present Upon Sample Rec't Samples Sample Y or N COC Record Present COC Record? Y or N Holding Times Cooler Temp. 14.3 °C 7912 3430 5074/2.1 7912 3430 5030	j							;	5									Co	ndition	Q, a	N			fu ou	
Relinquished by Date Time Belinquished by Date Time COMPOSITE Received by Date Time Discrepancies Between On N Upon Sample Rec't Samples Labels and Signature Coc Record? Y or N Holding Times Cocoler Temp. COMPOSITE REWRITTEN Discrepancies Between On N Upon Sample Rec't Samples Labels and COC Record? Y or N Holding Times Cocoler Temp. Cocoler				•															•			Sar	nple(Y) or 1	N
by by Dete Time by DRIGINAL Samples Labela and 5) Received Within Coc Record? Y or M Holding Times Cooker Temp. 14.3 °C 7912 3430 5074/2.1 7912 3430 5030	Dallmanlahad		Received	1		Relinguis	hed	 -						٠		e Octu-	<u> </u>	J Pro							
Sel Ex Dy Width 11:19-02 09:10 WASTE PEWRITTEN NOTES: Holding Times Cooler 14.3 °C 79:12 3430 5074/2.1 79:12 3430 5030			_	Date	Time	by		<u> </u>	_by	בַּחָבַי	Ğ۱	IAI		Samp	les Lab	els and		5) F	`	_		Upo	in Samu		
7912 3430 5074/2.1 7912 3430 5030	D118~	12	1 how the	11.19.00	010	C			T.							7Y or	(N)			mes			Her LL	1.3	۰,
			1)	1				7		-175	76					# 3 ^ 5	5074	la.	۱۰ ۱				-		
	<u></u>							<u></u>			1		L										نست		لىسسە

FH-Central Platea	u Project	CF	IAIN OF CUST	ODY/S	AMP.	LE.	ANALY	SIS	RE	QUEST		F03-	<u>-005-011</u>	Page 1	ot 1
Collector P. NJ elson		Compa	ny Contact e Trent	Telephor 373-58	ne No.				Pro	lect Coordin NT, SJ	ator	rice Code	8N	Data Tur	naround Days
Project Designation 200 Area Source Characteriza	tion 200-CS-1 OU - Waste		ng Location							F No. -005	A	ir Quality			
Ice Chest No. SEE O	392	Field L	ogbook No. N - 3251		COA 11751)	<u> </u>		thed of Ships ederal Expres					
Shipped To AAA 1 1800 EDENLAND SINUS SINUS COM	nety TMA) RECRI	Offsite	Property No.	030	030	<u>ک</u>			Bill	of Lading/	Air Bill No	· Set	057	ے'	
POSSIBLE SAMPLE HAZA	RDS/REMARKS	i		<u> </u>	1	1	1		1	1	i		}	1	\
			Preservation	Cool 4C	Cool		Cool 4C	Cool		None	None	None	None	None	11111111
 Special Handling and/or S	Storage		Type of Container	a.c	₽G		ىء	aC		26	a.G	aG	aG	a6,	N 11/13/02
	J	!	No. of Container(s)	1	. 1		1	1		1	1	1	1	1	,
			Volume	60g	250 250	- J	60g 60ml	250 250	•	125g	500g 500ml	60g	10001	500s	
			<u> </u>	VOA - 8260A (TCL)		(1) in	Alcohols, Glycols, &	PCBs -	_	Sec item (2) in Special	Sec item (3) i Special		See item (4) is Special		
	SAMPLE ANALYS	is		()	Instruc		Ketones - 8015M (Add-	1		instructions.	Instructions		Instructions.	99, Tritium	1
							on) (1- Propunol,						19 70	I = I	
				<u> </u>	<u> </u>		Ethanol}				<u> </u>		N,	אוייונא	102
Sample No.	Matrix *	Sample Date	Sample Time			2 3		Cr.							
B15YL7	SOIL	<u>11-14-02</u>	0939	X	X	()	Χ.	X	<u> </u>		X	X	K	1	
				<u> </u>										1/	
				<u> </u>				<u> </u>	·				1	//	
				<u> </u>	<u> </u>	_				ļ	<u>.</u>		1/	<u> </u>	
	<u> </u>			<u> </u>	<u> </u>					<u></u>	<u></u> _		11	<u> </u>	<u> </u>
CHAIN OF POSSESSIO		Sign/Prin	t Names	ete/Time [3			IAL INSTR			npling instruction	une.				Matrix *
Resinguished By Remoted From	11-14-02-	Received By/Stor	18/3728 It	14-02	_							I-Diesel Range	- WTPH-D		SE-Soliment SO-Solid
Retinquished By/Removed From	Date/Time	Received By/Stor		ate/Time		(2) IC	P Metals - 60	10A (Su	pertrac	ce) (Arsenic, B	arium, Cadri	ium, Chromium um, Bismuth, B	ı, Lead, Seleni	um, Silver); . Copper.	SI-Sladge W = Water
STORIENTALL	(1/802 1/00	٥		ate/Time		Iron, N	fagnesium, M	anganes	e, Mo	lybdenum Nich	el, Potassiu	n, Sodium, Thal	llium, Vanadii	ım, Zinc};	A=Air
Retinquished By/Removed From		Received By/Stor	- 10//	_	00	Mercu (3) IC	ry - 7471 - (C Anions - 300	v); Chro .0 (Chlo	omium oride. F	ı Hex - 7196 Fluoride, Nitratı	e Nitrite. Ph	osphate, Sulfate); NO2/NO3	- 353.2;	DS=Drum Solids DL=Drum Liquids
Relinquished By/Removed From	//DO Date/Time	Received By/Stor		ate/Time	_	Ammo	min - 350.3: St	ulfides -	9030:	Total Cyanide	- 9010				T=Tistate Wi=Wipe
SIGALE SISTED_11	1502 1100		<u> </u>			154, E	uropium-155}	; Gamm	u Spec	c - Add-on (An	nericium-241	137, Cobalt-60, , Antimony-125	, Barium-133,	Cesnum-134,	L=Liquid V=Vegetation
Relinquished By Removed From	O/PO ICO -P/ -//	Received Ryston	11-14-03 led to D	- OR 1 C	s 1:	Isotopi	e Uranium; St	brontium-	-89,90		rbon-14; No	onium; Isotopic ptunium-237; To			X=06er
Relinquished By/Removed From	Date/Time!	Received By/Stor	red in Da	ite/Time	}	441, A	1147 1411111111111111111111111111111111	/CE (CE1/	-244 (. ,,	•	vailable to			
				at the same of the	itle					relinq	ing paran ing ang	vauable to les from the	3728	Date/Time	<u> </u>
LABORATORY Received By SECTION	у			11	rufC					Ref#	135_ on	11 1181	<u>0</u> 2		
FINAL SAMPLE Disposal M DISPOSITION	ethod						Dispo	sed By						Date/Time	

LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

LIENT: Thu Hanford

rchase Order/Project:

DATE: 11.19.02

AF# SOW# / Release #: F03-005

aboratory SDG #:

aborat	ory SDG #:	7			
OTE:	ALL ENTRIES MARKED "NO" MUST BE	EXPLAINED I	N THE COMM	ENT SECTION	· · · · · · · · · · · · · · · · · · ·
1.	Custody seals on coolers or shipping container intact, signed and dated?	Q/Yes	□ No	DN/A	☐ see Comment #
2.	Outside of coolers or shipping containers are free from damage?	Eyyes	D No	D N/A	□ see Comment #
3.	Airbill # recorded?	Offics	□ No	O N/A	☐ see Comment #
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	Yes	□ No	∵ □N/A	□ see Comment #
5.	Sample containers are intact?	QYes	□ N ₀	□ N/A	□ see Comment #
6.	Custody seals on sample containers intact, signed and dated?	D/Yes	□ N ₀	D N/A	□ see Comment #
7.	All samples on coc received?	Yes	□ No	□ N/A	· □ see Comment #
8.	All sample label information matches coc?	Ves	□ No	D N/A	D see Comment #
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	TYYES	□ N ₀	□ N/A	□ see Comment #
10.	Shipment meets LvLl Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	17 14.00 IF 19.00	2 No	□ N/A	see Comment # (
11.	Where applicable, bar code labels are affixed to coc?	□ Yes	□ No	NVA	D see Comment #
12.	coc signed and dated?	Yes	□ No	D N/A	C) see Comment #
13.	coc will be faxed or emailed to client?	E Yes	□ No	□ N/A	☐ see Comment #
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	□ Yes	□ No	□ N/A	☐ see Comment#

Cooler # / temp (°C) and Comments:

ERC 99-058/14.3°C

ERC FS-002/2.4°C ERC 99-055/2.1°C

Laboratory Sample Custodian:

Laboratory Project Manager:

#1 Cooler ERC 99.058= 14.3"

B

DATE RECEIVED: 11/19/02 LVL LOT # :0211L177

CLIENT ID	LVL	#	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
							
B15YL7	001		s	02LE1426	11/14/02	11/25/02	11/25/02
B15YL7	001	MŞ	S	02LE1426	11/14/02	11/25/02	11/25/02
B15YL7	001	MSD	S	02LE1426	11/14/02	11/25/02	11/25/02
LAB QC:							
BLK	MB1		S	02LE1426	N/A	11/25/02	11/25/02
BLK	MB1	BS	S	02LE1426	N/A	11/25/02	11/25/02
BLK	MB1	BSD	S	02LE1426	N/A	11/25/02	11/25/02

Jew wals





Analytical Report

Client: TNU HANFORD F03-005

LVL#: 0211L177

SDG/SAF#: H1977/F03-005

W.O.#: 11343-606-001-9999-00

Date

Date Received: 11-19-02

GC SCAN

One (1) soil sample was collected on 11-14-02.

The sample and its associated QC samples were analyzed on 11-25-02 according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures based on method 8015B for n-propyl Alcohol and Ethanol.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

- 1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 2. All required holding times for analysis have been met.
- 3. The method blank was below the reporting limits for all target compounds.
- 4. Surrogates are not currently employed in the methodology.
- 5. All blank spike recoveries were within acceptance criteria.
- 6. All matrix spike recoveries were within acceptance criteria.
- 7. All initial calibrations were within acceptance criteria.
- 8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
- 9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

r:\group\data\gesc\11L-177.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 7 pages.



GLOSSARY OF GC SCAN DATA

DATA QUALIFIERS

- U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I = Interference.

ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- **BSD** = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- MSD = Indicates matrix spike duplicate.
- **DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA = Not Applicable.
- DF = Dilution Factor.
- NR = Not Required.
- SP = Indicates Spiked Compound.

GC SCAN

Report Date: 12/03/02 15:06

	Cust ID:	B15YL7	B15YL7	B15YL7	BLK	BLK BS	BLK BSD
Sample	RFW#:	001	001 MS	001 MSD	02LE1426-MB1	02LR1426-MB1	02LE1426-MB1
Information	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1,00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	:	fl-	fl	f	l======f1	.======f]	L======f
-Propyl Alcohol_		22 U	101 %	100 %	25 U	101 %	98 %
thanol		22 U	101 %	102 %	25 บั	103 %	102 %

Agr. Jrh

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Lionville Labor	atory U	Jse Only	Custo	ody T	rans	ste	rt	tec)(U/L	.au		/1 K		- 1 -		_	_				_				
02111	-17-	1	1	FIELD PE	RSONN	(EL:	COM	PLETE	ONLY S	HADED	ARE	_	_		^			E		٤		L	N 910 13	llog (1)	9776
			· · · · · · · · · · · · · · · · · · ·					D.41			<u> </u>	B 14	14		<u> </u>		_7	4		4	5				
Client Tn			9 FO	3-005			{	Retriger	rator #	Liquid		1 4	-4-					7	:	-					
Est. Final Pro	j. Samp	oling Date.	001.00	240 -0	<u> </u>			#/Туре	Container	Solid	lin e	les-s	1		laz			by.		1.					
Project #			6- 001.4	174.00						Liquid	10.5	1 60.	0		lag	-		8	1	lag	120			حيست ت	
Project Conta	ct/Pho	ne #	anager (Orl)		<u>n</u> .			Volume	٠		7.0	200	350		60			120	}	500	1.0				
oc 260	oratory .C_	Project Mi	SAD TAT	3045	WAVE		 !	Presen	vatluse	+		<u> 200</u>	450		-					تعر	OO.			-)
			181	-3 22	THE PERSON	<u> </u>	====				-	ORC	GANIC	1	1 1		_	INC	DAG			لـــا			
Date Rec'd _	اللا	₹.02-	Date Due	12.	-19-02	<u> </u>		ANALY REQUE		-	1 000	T	P	£ £	Alcour			구출(- 11/2		25 55	E				
MATRIX						Ma	trix		T				1	1		Lionvi	He Lai		~			1			<u> </u>
S - Soil SE - Sediment SO - Soild SL - Siudge	Lab ID		Client ID/Des	Cription		Cho (e	C Seen (1) MSD	Metrix	Date Collected	Time Collected	9 6 2 4 H	0625 x	OPCB		06656			0 2 2 C	•	INDRE (F-014				
W - Water O - Oil	001	BI	5 YL7			X	X	S	11-14-02	0936	X	X	X		×	┝╼╅		~	: -	1	X	 -	 		<u> </u>
A - Air DS - Drum							,		10.03			1	-		1			/ _							
Solids DL - Drum												1								†					
Liquids L - Ep/TCLP																		1		1					
Leachate WI - Wipe				-,,						<u> </u>															
X - Other F - Fish				~~~~ _								-		-											
r = risti				· · · · · · · · · · · · · · · · · · ·															;						
		1																							
																				1					
!																	$\neg \uparrow$								
Special Instruct	lons:		·			ı	DATE	REVISION	IS:	ر اه	1 01	5	0.	DJ-T	20'	72 /	2. C			Lionvii	le Labo	ratory	Use Or	ily	
						-		2	A. B.	Mn.	No. N	li K	. rg. . Ng.	R. V	2 . Di	, <u>U, c</u> , He	<u> </u>	1)	mples \	werey	or	1) F	per Resis Present	on Ou	ter
						_			LCCL.									Airt	b##	vered _			:kage (*) Inbrok <u>a</u>	-	, ,
					•	-			IN3N									SQ1	يا مع	حلات		Pac	kage 🕻	D or	N Į
						-		4	. 2000	L. ANT] (* .			_==:	<u></u>					itor Ch ecLin Go		3) P	Present	on San y or	nple N
			A			-		5	i									J		din a	N		Inbroke		. }
						_		6	٠				<u>.</u>						Sample		.d		nple(Y	,	ſ
Relinquished	T	Received	Date	Time	Relin	nquisi	red		leceived	"5.Da	ıte	Tlm		Discre	pancie	Betwe	en	- 110		reserve			C Recor n Same		
by	-+-	by				by	A N. A.	OSIT	by) ORI	<u>G</u> n	HAL		Samp	les Lab	els and ?Y or			- Receive	od Withi	п			or	
Sty Ex		DWYC	111902	010				SIE	• ·	REW	R	FIF	N	NOTE		. , ur	<u>ت</u>	Hok	ding Tit	1068 Yor	N	Cool	16r 17	.3	œ Ì
		7.)												791	<u>a 3</u>	f30;	5074	l/a.				130 :			
	_														77(313	ZΥ	30			2.4				

FH-Centra	l Plateau Project	CI	IAIN OF CUST	ODY/S	AMI	PLE	ANALY	SIS	RE(QUEST		F03-	005-011	Page 1	of 1
Collector Nic	1/Son	Compa	ny Contact Trent	Telepho 373-5	ne No.				Proie	ct Coordin	etor	rice Code	8N	Data Tur	
Project Designation	haracterization 200-CS-1 OU - Waste		ng Location				SAF No. F03-005 Air Qua		ir Quality	ality 🗌 45 I		Days			
Ice Chest No.	EE 037C	Field L	ogbook No. N - 3251		COA 1175	14ES1	0			od of Ship: ieral Expre					
Shipped To	MAIDOR RECR	Offsite	Property No.	030	03	0	_		Bill o	of Lading/A	Air Bill No.	562	5 057		
	LE HAZARDS/REMARKS								- T		,	<u> </u>			}
			Preservation	Cool 4C	Coo	3 4C	Cool 4C	Cool	4C	None	None	None	None : 1	None	1
Special Handling	g and/or Storage		Type of Container	a.g	*	G	ى.	a (3	679 Q.G	a.G	46	aG	aG R	N 11/13/02
	•		No. of Container(s)	1	1	1	1	1		1	1	1	1	. 1	
			Volume	60g		50g	60g	250	·	125g	500g	60g	1000	5001	
	SAMPLE ANALYS	sis		60 m l VOA - 82604 (TCL)	Spe	m (1) in	Alcohole, Glycols, & Ketones - 8015M (Add- on) (1- Propanol, Ethanol)	PCBs -		120m (See item (2) in Special Instructions.	500ml See item (3) in Special Instructions.	60 m (pH (Soil) - 9045	See item (1) in Special Instructions	Nickelo; Technium- 99; Trium- 13	102
Sample No	o. Matrix *	Sample Date	Sample Time									ni e	11 To 10 To		
B15YL7	SOIL	11-14-02	0939	Х	>	ζ.	X	X		X	y	У	k		
				<u> </u>	—							-	-	 /	
ļ				<u> </u>	 				-			 	 /	¥	
	Occupation in the second secon	or del		<u></u> _	┸,							<u>i</u>	1	<u> </u>	Matrix *
CHAIN OF PORTION OF PO	ed From Date/Time 1371) R. NillOin 11-(4-02- ed From Date/Time ed From Date/Time	Received By/Stor	ed In D	ate/Time 2 4-02 ate/Time	320	(1) Se (2) IC ICP M Iron, I Merce (3) IC	CP Metals - 601 Letals - 6010A Magnesium, M my - 7471 - (C C Amons - 300	or specification (Action (Supertransporters) (Supertransporters) (Chico)	ic sampled (Oz) (pertrace) race Add e, Molyl omium H ride, Flu	(Tributy) pho.) (Arsenic, B.)-(Alumi bdenum, Nicl iex - 7196 aoride, Nitrati	sphate); TPH arium, Cadmi num, Berylliu tel, Potassium e, Nitrite, Pho	I-Dieset Range ium, Chromium am, Bismath, B n, Sodium, Thai asphate, Sulfate	, Lead, Seleniu oron, Calcium, lium, Vanadiu	Copper, m, Zinc};	S-Solt SB-Sediment SO-Solid SI-Sheige W = Water O-Oil A-Air DS-Drum Solids DL-Drum Liquids
Relinquished By/Remov	ed From Date/Time	Received By/Stor	ed,in D	ate/Time		America (4) G 154, E Radius Isotop	onia - 350.3; St ross Alphu; Gr Europium-155) m-226, Radiun	ulfides - coss Beta ; Gamm n-228, Se rontium	9030; To ; Garren a Spec - odium-2 89,90	otal Cyanide as Spectrosco Add-on (Arr 12, Tin-126); Total Sr; Ca dd-on) (Curi	- 9010 py {Cesium-! tericium-241, Isotopic Pluto rbon-14; Nep	137, Cobalt-60, Antimony-125 oraum: Isotopic dunium-237; To	Europium-152 , Barium-133, (Thorium (Tho	, Europium- Cesium-134, rium-232};	T=Tissue WI=Wips L=Liquid V=Vegetation X=Other
LABORATORY SECTION	Received By	<u> </u>		T	itle .		<u> </u>		-	reling	uish sampl	ics from the // //8/	3728 [02	Date/Time	I
FINAL SAMPLE DISPOSITION	Disposal Method						Dispo	sed By						Date/Time	

	LIONVILLE LABO SAMPLE RE	RATORY	INCORPO	RATED	
CLIEN			(IECKLIS)	L	'
	e Order/Project:			DAT	TE: 11.19.02
~~~	<del></del>			2023	1. [4.06
SAF#	SOW#/Release #: FO3-005	<b>-</b> ,			
Laborat	ory SDG #:				,
	_ ()\a\\\\\\\				<u> </u>
	ALL ENTRIES MARKED "NO" MUST BE				Υ
1.	Custody seals on coolers or shipping container intact, signed and dated?	Yes	□ No	□ N/A	☐ see Comment #
		•	•		•
2.	Outside of coolers or shipping containers are free from damage?	Tyres	□ No	□ N/A	D see Comment #
	Hee Holl Gallage:	/			
3.	Airbill # recorded?	DA'es	□ No	D N/A	🗆 see Comment #
4.	All expected paperwork received (coc and				- see Comment #
7.	other client specific: historical data,	D√Yes	□ No	□ N/A	☐ see Comment #
	alpha/beta or other screening data as applicable)? (paperwork scaled in plastic	/			·
	bag and taped to inside lid)	•			
	Sample containers are intact?	,			• ,
<i>5</i> .		Yes	□ No	D N/A	□ see Comment #
6.	Custody seals on sample containers intact,	DyYes	□ No	□ N/A	□ see Comment #
	signed and dated?	. 1			
7.	All samples on coc received?	Yes	□ No	□ N/A	D see Comment #
8.	All sample label information matches coc?	o Yes	D No	DN/A	D see Comment #
	•		•		~ see Colinitetts #
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	Yes	□ No	□ N/A	D see Comment #
		N-11-19.0	7		
10.	Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within	- Yes-	M No	□ N/A	see Comment # (
	policy. See reverse side for policy)	<i>(</i>	7,		A see Community
				~	•
11.	Where applicable, bar code labels are affixed to coc?	□ Yes	□ No	V/KG	□ sec Comment #
		ا د			
12.	coc signed and dated?	Ves	□ No	□ N/A	☐ see Comment #
13.	coc will be faxed or emailed to client?	Yes	□ No	[**] <b>*</b> 244	_
	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s		<b>□</b> 170:	□ N/A	□ see Comment #
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	☐ Yes	□ No	□ N/A	D see Comment #

Cooler #/temp (°C) and Comments: ERC 99 - 058/14.3°C

**,** '

ERC FS-002/2.4°C ERC 99.055/21°C

Laboratory Sample Custodian:

Laboratory Project Manager:

#1 Cooler ERC 99.058= 14.3



DATE RECEIVED: 11/19/02

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B15YL7			·			
SILVER, TOTAL	001	s	02L0691	11/14/02	11/25/02	11/27/02
SILVER, TOTAL	001 REP	S	02L0691	11/14/02	11/25/02	11/27/02
SILVER, TOTAL	001 MS	S	02L0691	11/14/02	11/25/02	11/27/02
ALUMINUM, TOTAL	001	S	02L0691	11/14/02	11/25/02	11/27/02
ALUMINUM, TOTAL	001 REP	S	02L0691	11/14/02	11/25/02	11/27/02
ALUMINUM, TOTAL	001 MS	S	02L0691	11/14/02	11/25/02	11/27/02
ARSENIC, TOTAL	001	S	02L0691	11/14/02	11/25/02	11/27/02
ARSENIC, TOTAL	001 REP	S	0210691	11/14/02	11/25/02	11/27/02
ARSENIC, TOTAL	001 MS	S	02L0691	11/14/02	11/25/02	11/27/02
BORON, TOTAL	001	S	02L0691	11/14/02	11/25/02	11/27/02
BORON, TOTAL	001 REP	S	02L0691	11/14/02	11/25/02	11/27/02
BORON, TOTAL	001 MS	S	02L0691	11/14/02	11/25/02	11/27/02
BARIUM, TOTAL	001	S	02L0691	11/14/02	11/25/02	11/27/02
BARIUM, TOTAL	001 REP	S	.02L0691	11/14/02	11/25/02	11/27/02
BARIUM, TOTAL	001 MS	S	02L0691	11/14/02	11/25/02	11/27/02
BERYLLIUM, TOTAL	001	S	02L0691	11/14/02	11/25/02	11/27/02
BERYLLIUM, TOTAL	001 REP	S	02L0691	11/14/02	11/25/02	11/27/02
BERYLLIUM, TOTAL	001 MS	S	02L0691	11/14/02	11/25/02	11/27/02
BISMUTH, TOTAL	001	S	02L0691	11/14/02	11/25/02	11/27/02
BISMUTH, TOTAL REP	001 REP	S	02L0691	11/14/02	11/25/02	11/27/02
BISMUTH, TOTAL SPIKE	001 MS	S	02L0691	11/14/02	11/25/02	11/27/02
CALCIUM, TOTAL	001	s	02L0691	11/14/02	11/25/02	11/27/02
CALCIUM, TOTAL	001 REP	s	02L0691	11/14/02	11/25/02	11/27/02
CALCIUM, TOTAL	001 MS	s	02L0691	11/14/02	11/25/02	11/27/02
CADMIUM, TOTAL	001	. S	02L0691	11/14/02	11/25/02	11/27/02
CADMIUM, TOTAL	001 REP	s	02L0691	11/14/02	11/25/02	11/27/02
CADMIUM, TOTAL	001 MS	S	02L0691	11/14/02	11/25/02	11/27/02
CHROMIUM, TOTAL	001	s	02L0691	11/14/02	11/25/02	11/27/02
CHROMIUM, TOTAL	001 REP	s	02L0691	11/14/02	11/25/02	11/27/02
CHROMIUM, TOTAL	001 MS	S	02L0691	11/14/02	11/25/02	11/27/02
COPPER, TOTAL	001	s	02L0691	11/14/02	11/25/02	11/27/02
COPPER, TOTAL	001 REP	S	02L0691	11/14/02	11/25/02	11/27/02
COPPER, TOTAL	001 MS	s	02L0691	11/14/02	11/25/02	11/27/02
IRON, TOTAL	001	s	02L0691	11/14/02	11/25/02	11/27/02
IRON, TOTAL	001 REP	s	02L0691	11/14/02	11/25/02	11/27/02

DATE RECEIVED: 11/19/02 LVL LOT # :0211L177

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
IRON, TOTAL	001 MS	s	02L0691	11/14/02	11/25/02	11/27/02
MERCURY, TOTAL	001	s	02C0350	11/14/02	11/26/02	11/27/02
MERCURY, TOTAL	001 REP	s	02C0350	11/14/02	11/26/02	11/27/02
MERCURY, TOTAL	001 MS	s	02C0350	11/14/02	11/26/02	11/27/02
POTASSIUM, TOTAL	001	s	02L0691	11/14/02	11/25/02	11/27/02
POTASSIUM, TOTAL	001 REP	s	02L0691	11/14/02	11/25/02	11/27/02
POTASSIUM, TOTAL	001 MS	s	02L0691	11/14/02	11/25/02	11/27/02
MAGNESIUM, TOTAL	001	s	02L0691	11/14/02	11/25/02	11/27/02
MAGNESIUM, TOTAL	001 REP	S	02L0691	11/14/02	11/25/02	11/27/02
MAGNESIUM, TOTAL	001 MS	S	02L0691	11/14/02	11/25/02	11/27/02
MANGANESE, TOTAL	001	S	02L0691	11/14/02	11/25/02	11/27/02
MANGANESE, TOTAL	001 REP	s	02L0691	11/14/02	11/25/02	11/27/02
MANGANESE, TOTAL	001 MS	s	0210691	11/14/02	11/25/02	11/27/02
MOLYBDENUM, TOTAL	001	s	02L0691	11/14/02	11/25/02	11/27/02
MOLYBDENUM, TOTAL	001 REP	S	02L0691	11/14/02	11/25/02	11/27/02
MOLYBDENUM, TOTAL	001 MS	S	02L0691	11/14/02	11/25/02	11/27/02
SODIUM, TOTAL	001	S	02L0691	11/14/02	11/25/02	11/27/02
SODIUM, TOTAL	001 REP	S	02L0691	11/14/02	11/25/02	11/27/02
SODIUM, TOTAL	001 MS	S	02L0691	11/14/02	11/25/02	11/27/02
NICKEL, TOTAL	001	S	02L0691	11/14/02	11/25/02	11/27/02
NICKEL, TOTAL	001 REP	S	02L0691	11/14/02	11/25/02	11/27/02
NICKEL, TOTAL	001 MS	S	02L0691	11/14/02	11/25/02	11/27/02
LEAD, TOTAL	001	S	02L0691	11/14/02	11/25/02	11/27/02
LEAD, TOTAL	001 REP	s	02L0691	11/14/02	11/25/02	11/27/02
LEAD, TOTAL	001 MS	S	02L0691	11/14/02	11/25/02	11/27/02
SELENIUM, TOTAL	001	S	02L0691	11/14/02	11/25/02	11/27/02
SELENIUM, TOTAL	001 REP	s	02L0691	11/14/02	11/25/02	11/27/02
SELENIUM, TOTAL	001 MS	S	02L0691	11/14/02	11/25/02	11/27/02
THALLIUM, TOTAL	001	S	02L0691	11/14/02	11/25/02	11/27/02
THALLIUM, TOTAL	001 REP	S	02L0691	11/14/02	11/25/02	11/27/02
THALLIUM, TOTAL	001 MS	S	02L0691	11/14/02	11/25/02	11/27/02
VANADIUM, TOTAL	001	S	02L0691	11/14/02	11/25/02	11/27/02
VANADIUM, TOTAL	001 REP	S	02L0691	11/14/02	11/25/02	11/27/02
VANADIUM, TOTAL	001 MS	S	02L0691	11/14/02	11/25/02	11/27/02
ZINC, TOTAL	001	S	02L0691	11/14/02	11/25/02	11/27/02
ZINC, TOTAL	001 REP	s	02L0691	11/14/02	11/25/02	11/27/02
ZINC, TOTAL	001 MS	s	02L0691	11/14/02	11/25/02	11/27/02
						į.

LAB QC:

SILVER LABORATORY	LC1 BS	S	02L0691	N/A	11/25/02	11/26/02

DATE RECEIVED: 11/19/02 LVL LOT # :0211L177

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SILVER, TOTAL	MB1	s	02L0691	N/A	11/25/02	11/26/02
ALUMINUM LABORTORY	LC1 BS	S	02L0691	N/A	11/25/02	11/27/02
ALUMINUM, TOTAL	MB1	S	02L0691	N/A	11/25/02	11/27/02
ARSENIC LABORATORY	LC1 BS	s	02L0691	N/A	11/25/02	11/26/02
ARSENIC, TOTAL	MB1	S	02L0691	N/A	11/25/02	11/26/02
BORON LABORATORY	LC1 BS	s	02L0691	N/A	11/25/02	11/26/02
BORON, TOTAL	MB1	s	02L0691	N/A	11/25/02	11/26/02
BARIUM LABORATORY	LC1 BS	S	02L0691	N/A	11/25/02	11/26/02
BARIUM, TOTAL	MB1	S	02L0691	N/A	11/25/02	11/26/02
BERYLLIUM LABORATORY	LC1 BS	s	02L0691	N/A	11/25/02	11/26/02
BERYLLIUM, TOTAL	MB1	s	02L0691	N/A	11/25/02	11/26/02
BISMUTH, LCS	LC1 BS	s	02L0691	N/A	11/25/02	11/26/02
BISMUTH, TOTAL	MB1	s	02L0691	N/A	11/25/02	11/26/02
CALCIUM LABORATORY	LC1 BS	S	02L0691	N/A	11/25/02	11/27/02
CALCIUM, TOTAL	MB1	S	02L0691	N/A	11/25/02	11/27/02
CADMIUM LABORATORY	LC1 BS	S	02L0691	N/A	11/25/02	11/26/02
CADMIUM, TOTAL	MB1	s	02L0691	N/A	11/25/02	11/26/02
CHROMIUM LABORATORY	LC1 BS	S	02L0691	N/A	11/25/02	11/26/02
CHROMIUM, TOTAL	MB1	S	02L0691	N/A	11/25/02	11/26/02
COPPER LABORATORY	LC1 BS	S	02L0691	N/A	11/25/02	11/26/02
COPPER, TOTAL	MB1	S	02L0691	N/A	11/25/02	11/26/02
IRON LABORATORY	LC1 BS	S	02L0691	N/A	11/25/02	11/26/02
IRON, TOTAL	MB1	S	02L0691	N/A	11/25/02	11/26/02
MERCURY LABORATORY	LC1 BS	S	02C0350	N/A	11/26/02	11/27/02
MERCURY, TOTAL	MB1	S	02C0350	N/A	11/26/02	11/27/02
POTASSIUM LABORATORY	LC1 BS	S	02L0691	N/A	11/25/02	11/27/02
POTASSIUM, TOTAL	MB1	S	02L0691	N/A	11/25/02	11/27/02
MAGNESIUM LABORATORY	LC1 BS	S	02L0691	N/A	11/25/02	11/27/02
MAGNESIUM, TOTAL	MB1	S	02L0691	N/A	11/25/02	11/27/02
MANGANESE LABORATORY	LC1 BS	S	02L0691	N/A	11/25/02	11/26/02
MANGANESE, TOTAL	MB1	S	02L0691	N/A	11/25/02	11/26/02
MOLYBDENUM LABORATOR	LC1 BS	S	02L0691	N/A	11/25/02	11/26/02
MOLYBDENUM, TOTAL	MB1	S	02L0691	N/A	11/25/02	11/26/02
SODIUM LABORATORY	LC1 BS	S	02L0691	N/A	11/25/02	11/27/02
SODIUM, TOTAL	MB1	S	02L0691	N/A	11/25/02	11/27/02
NICKEL LABORATORY	LC1 BS	S	02L0691	N/A	11/25/02	11/26/02
NICKEL, TOTAL	MB1	S	02L0691	N/A	11/25/02	11/26/02
LEAD LABORATORY	LC1 BS	S	02L0691	N/A	11/25/02	11/26/02

DATE RECEIVED: 11/19/02 LVL LOT # :0211L177

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
LEAD, TOTAL	MB1	s	02L0691	N/A	11/25/02	11/26/02
SELENIUM LABORATORY	LC1 BS	S	02L0691	N/A	11/25/02	11/26/02
SELENIUM, TOTAL	MB1	S	02L0691	N/A	11/25/02	11/26/02
THALLIUM LABORATORY	LC1 BS	S	02L0691	N/A	11/25/02	11/26/02
THALLIUM, TOTAL	MB1	S	02L0691	N/A	11/25/02	11/26/02
VANADIUM LABORATORY	LC1 BS	S	02L0691	N/A	11/25/02	11/26/02
VANADIUM, TOTAL	MB1	S	02L0691	N/A	11/25/02	11/26/02
ZINC LABORATORY	LC1 BS	S	02L0691	N/A	11/25/02	11/26/02
ZINC, TOTAL	MB1	S	02L0691	N/A	11/25/02	11/26/02



## **Analytical Report**

Client: TNU-HANFORD F03-005

LVL#: 0211L177

SDG/SAF#: H1977/F03-005

W.O.#: 11343-606-001-9999-00

Date Received: 11-19-02

### **METALS CASE NARRATIVE**

1. This narrative covers the analysis of 1 soil sample.

2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.

The sample was rerun for Aluminum, Calcium, Potassium, Magnesium, and Sodium.

- 3. All analyses were performed within the required holding times.
- 4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
- 5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.
- 6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
- 7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
- 8. All ICP Interference Check Standards were within control limits.
- 9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.
- 10. The matrix spike (MS) recoveries for 2 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.
- 11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration level for the following analytes:

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of pages.

		<u>PDS</u>	PDS
Sample ID	<u>Element</u>	Concentration (ppb)	% Recovery
B15YL7	Aluminum	40,000	98.3
	Iron	20,000	102.6

- 12. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
- 13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
- 14. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

gmb/m11-177

12-10-02



## METALS METHOD GLOSSARY

	nethods are used as refe し月77	rence for the digesti	on and analysi. ∦	s of sample	s contained within this
Leaching Proce	dure:13101311	1312Other:	<del></del>		
CLP Metals	Digestion and Analysis	s Methods:ILM0	3.0 _ILM04	.0	
Metals Digestion	n Methods:3005A Other:	3010A30153	020A	3051	_200.7SS17
		Ietals Analysis Me	ethods		<i>*.</i>
	C33/0.46	TOTO A	CITIZO & AIRTINO	EPA	***
	SW846	EPA	STD MTD	OSWR	USATHAMA
Aluminum	∠6010B	200.7			99
Antimony	6010B7041 *	200.7204.2	2112D		99
Arsenic		200.7206.2 200.7	3113B		99
Barium	<u></u>	200.7			<u>'99</u>
Beryllium	6910B '	200.7		1.220	99
Bismuth Boron	6910B	<u></u>	•	1620	99
Cadmium	6010B 7131A 5			•	99 99
Calcium Calcium	6010B	200.7			99 99
Chromium	6010B 7191 °	200.7 218.2			
Cobalt	6610B	200.7			5517
Copper	6010B 7211 5	200.7220.2			99
Iron	<b>6010B</b>	200.7			99
Lead	6010B 7421 °	200.7239.2	3113B		99
Lithium	6010B7430 ⁴	200.7		1620	99
Magnesium	_6010B	200.7		<del></del>	<u></u> 99.
Manganese		200.7			99
Mercury		245.1 2245.5 2			99
Molybdenum	6010B	200.7			99
Nickel	<u>6010B</u>	200.7			99
Potassiu <b>m</b>	<u>√6010B</u> 7610 '	200.7258.1 4			99
Rare Earths	6010B '	_200.7 '		1620	99
Selenium	∠6010B7740 °	200.7270.2	3113B		99
Silicon	6010B ¹	200.7		1620	99
Silica	6010B	200.7		1620	99
Silver	6010B _7761 *	200.7272.2			99
Sodium	<u></u>	200.7273.1 4	•		99
Strontium	6010B	_200.7	00.0		99
Thallium	∠6010B7841 ⁵	200.7	UU.Y		99
Tin	6010B	200.7			99
Titanium	6010B	200.7		1.000	99
Uranium Vonedina	_6010B ¹	200.7 ¹		1620	99
Vanadium	6010B	200.7			99
Zinc	6010B	200.7		1.620	99
Zirconium	6010B ¹	200.7 '		1620	99

07

L-W1-033/M-03/01

Method:

Other:_

## METHOD REFERENCES AND DATA QUALIFIERS

## DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

## **ABBREVIATIONS**

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LCS = Laboratory Control Sample.

NC = Not calculated.

## ANALYTICAL METAL METHODS

- I. Not included in the method element list.
- 2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
- 3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
- 4. Flame AA.
- 5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

#### INORGANICS DATA SUMMARY REPORT 12/10/02

CLIENT: TNUHANFORD F03-005 H1977

WORK	ORDER:	11343-606-001-9999-00
------	--------	-----------------------

HORIC GAD					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
******	2 - 1 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -		*****	****	=======================================	******
-001	B15YL7	Silver, Total	1.3	MG/KG	0.15	1.0
		Aluminum, Total	5290	MG/KG	2.3	1.0
		Arsenic, Total	3.4	MG/KG	0.40	1.0
		Boron, Total	0.54	MG/KG	0.22	1.0
		Barium, Total	69.1	MG/KG	0.03	1.0
		Beryllium, Total	0.18	MG/KG	0.02	1.0
		Bismuth, Total	0.62 u	MG/KG	0.62	1.0
		Calcium, Total	6950	MG/KG	2.0	1.0
		Cadmium, Total	0.11	MG/KG	0.04	1.0
		Chromium, Total	19.6	MG/KG	0.10	.1.0
		Copper, Total	14.5	MG/KG	0.14	1.0
		Iron, Total	24100	MG/KG	2.1	1.0
		Mercury, Total	0.02	MG/KG	0.02	1.0
		Potassium, Total	840	MG/KG	52.0	1.0
		Magnesium, Total	4500	MG/KG	4.1	1.0
		Manganese, Total	340	MG/KG	0.02	1.0
		Molybdenum, Total	0.18 u	MG/KG	0.18	1.0
		Sodium, Total	155	MG/KG	2.7	1.0
		Nickel, Total	8.3	MG/KG	0.14	1.0
		Lead, Total	4.3	MG/KG	0.25	1.0
		Selenium, Total	0.40 u	MG/KG	0.40	1.0
		Thallium, Total	0.58 u	MG/KG	0.56	1.0
		Vanadium, Total	65.1	MG/KG	0.10	1.0
		Zinc, Total	44.9	MG/KG	0.08	1.0

### INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/10/02

CLIENT: TNUHANFORD F03-005 H1977

WORK	ORDER:	11343-606-001-9999-00
------	--------	-----------------------

					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
= 2 5 × 3 × 2		<b>过程设置是全体的基础的</b> 全面的代码是实现的实施。	******			=###E=#E
BLANK1	02L0691-MB1	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Aluminum, Total	2.2 u	MG/KG	2.2	1.0
		Arsenic, Total	0.38 u	MG/KG	0.38	1.0
		Boron, Total	0.21 u	MG/KG	0.21	1.0
		Barium, Total	0.04	MG/KG	0.03	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.59 u	MG/KG	0.59	1.0
		Calcium, Total	3.0	MG/KG	1.9	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	0.26	MG/KG	0.10	.1.0
		Copper, Total	0.20	MG/KG	0.13	1.0
		Iron, Total	2.0 u	MG/KG	2.0	1.0
		Potassium, Total	49.8 u	MG/KG	49.8	1.0
		Magnesium, Total	3.9 u	MG/KG	3.9	1.0
		Manganese, Total	0.04	MG/KG	0.02	1.0
		Molybdenum, Total	0.18	MG/KG	0.17	1.0
		Sodium, Total	4.6	MG/KG	2.6	1.0
		Nickel, Total	0.13 u	MG/KG	0.13	1.0
		Lead, Total	0.24 u	MG/KG	0.24	1.0
		Selenium, Total	0.38 u	MG/KG	0.38	1.0
		Thallium, Total	0.56 u	MG/KG	0.56	1.0
		Vanadium, Total	0.10 u	MG/KG	0.10	1.0
		Zinc, Total	0.14	MG/KG	0.08	1.0
BLANK1	02C0350-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

#### INORGANICS ACCURACY REPORT 12/10/02

CLIENT: TNUHANFORD F03-005 H1977 WORK ORDER: 11343-606-001-9999-00

-001 B15YL7 Silver, Total 5.8 1.3 4.7 95.7  Aluminum, Total 5920 5290 190 331.8*  Arsenic, Total 182 3.4 190 94.2  Boron, Total 86.7 0.54 94.9 90.8  Barium, Total 252 69.1 190 96.6  Beryllium, Total 448 0.62u 474 94.5  Calcium, Total 8780 6950 2370 76.9  Cachaium, Total 4.6 0.11 4.7 95.6  Chromium, Total 36.1 19.6 19.0 86.8  Copper, Total 37.7 14.5 23.7 97.9  Iron, Total 25100 24100 94.9 1069 *  Mercury, Total 3080 840 2370 94.6  Magnesium, Total 3080 840 2370 94.6  Magnese, Total 394 340 47.5 115.4*  Molybdenum, Total 394 340 47.5 115.4*  Molybdenum, Total 89.5 0.18u 94.9 94.3  Sodium, Total 53.9 8.3 47.5 96.0  Lead, Total 48.9 4.3 47.5 93.9  Selenium, Total 188.9 4.3 47.5 93.9  Selenium, Total 188.9 4.3 47.5 93.9				SPIKED	INITIAL	SPIKED		DILUTION
Bisylf   Silver, Total   5.8   1.3   4.7   95.7	ΓŖ	SITE ID	ANALYTE	SAMPLE	RESULT	AMOUNT	*RECOV	factor (spk)
Aluminum, Total 5920 5290 190 331.8*  Arsenic, Total 182 3.4 190 94.2  Boron, Total 86.7 0.54 94.9 90.8  Barium, Total 252 69.1 190 96.6  Beryllium, Total 4.5 0.18 4.7 91.9  Bismuth, Total 448 0.62u 474 94.5  Calcium, Total 8780 6950 2370 76.9  Cadmium, Total 4.6 0.11 4.7 95.6  Chromium, Total 36.1 19.6 19.0 86.8  Copper, Total 37.7 14.5 23.7 97.9  Iron, Total 25100 24100 94.9 1069 *  Mercury, Total 0.18 0.02 0.15 101.9  Potassium, Total 3080 840 2370 94.6  Magnesium, Total 394 340 47.5 115.4*  Molybdenum, Total 89.5 0.18u 94.9 94.3  Sodium, Total 2470 155 2370 97.7  Nickel, Total 53.9 8.3 47.5 96.0  Lead, Total 48.9 4.3 47.5 93.9  Selenium, Total 175 0.40u 190 92.0  Thallium, Total 175 0.40u 190 92.0	===	生物对应不是全面对面非正常是有效的过去		#235#2 <b>2</b>	E22X445	CF==6E	25743E	========
Arsenic, Total 182 3.4 190 94.2 Boron, Total 86.7 0.54 94.9 90.8 Barium, Total 252 69.1 190 96.6 Beryllium, Total 4.5 0.18 4.7 91.9 Bismuth, Total 448 0.62u 474 94.5 Calcium, Total 8780 6950 2370 76.9 Cadmium, Total 4.6 0.11 4.7 95.6 Chromium, Total 36.1 19.6 19.0 86.8 Copper, Total 37.7 14.5 23.7 97.9 Iron, Total 25100 24100 94.9 1069 * Mercury, Total 0.18 0.02 0.15 101.9 Potassium, Total 3080 840 2370 94.6 Magnesium, Total 394 340 47.5 115.4* Molybdenum, Total 89.5 0.18u 94.9 94.3 Sodium, Total 53.9 8.3 47.5 96.0 Lead, Total 48.9 4.3 47.5 93.9 Selenium, Total 175 0.40u 190 92.0 Thallium, Total 175 0.40u 190 92.0		B15YL7	Silver, Total	5.8	1.3	4.7	95.7	1.0
Boron, Total 86.7 0.54 94.9 90.8  Barium, Total 252 69.1 190 96.6  Beryllium, Total 4.5 0.18 4.7 91.9  Bismuth, Total 448 0.62u 474 94.5  Calcium, Total 8780 6950 2370 76.9  Cadmium, Total 4.6 0.11 4.7 95.6  Chromium, Total 36.1 19.6 19.0 86.8  Copper, Total 37.7 14.5 23.7 97.9  Iron, Total 25100 24100 94.9 1069 *  Mercury, Total 0.18 0.02 0.15 101.9  Potaesium, Total 3080 840 2370 94.6  Magnesium, Total 6930 4500 2370 102.3  Manganese, Total 394 340 47.5 115.4*  Molybdenum, Total 89.5 0.18u 94.9 94.3  Sodium, Total 53.9 8.3 47.5 96.0  Lead, Total 48.9 4.3 47.5 93.9  Selenium, Total 175 0.40u 190 92.0  Thallium, Total 175 0.40u 190 92.0  Thallium, Total 183 0.58u 190 96.4			Aluminum, Total	5920	5290	190	331.8*	1.0
Barium, Total 252 59.1 190 96.6 Beryllium, Total 4.5 0.18 4.7 91.9 Bismuth, Total 448 0.62u 474 94.5 Calcium, Total 8780 6950 2370 76.9 Cadmium, Total 4.6 0.11 4.7 95.6 Chromium, Total 36.1 19.6 19.0 86.8 Copper, Total 37.7 14.5 23.7 97.9 Iron, Total 25100 24100 94.9 1069 * Mercury, Total 0.18 0.02 0.15 101.9 Potaesium, Total 3080 840 2370 94.6 Magnesium, Total 6930 4500 2370 102.3 Manganese, Total 394 340 47.5 115.4* Molybdenum, Total 89.5 0.18u 94.9 94.3 Sodium, Total 53.9 8.3 47.5 96.0 Lead, Total 48.9 4.3 47.5 93.9 Selenium, Total 175 0.40u 190 92.0 Thallium, Total 175 0.40u 190 92.0			Arsenic, Total	182	3.4	190	94.2	1.0
Beryllium, Total 4.5 0.18 4.7 91.9 Bismuth, Total 448 0.62u 474 94.5 Calcium, Total 8780 6950 2370 76.9 Cadmium, Total 4.6 0.11 4.7 95.6 Chromium, Total 36.1 19.6 19.0 86.8 Copper, Total 37.7 14.5 23.7 97.9 Iron, Total 25100 24100 94.9 1069 * Mercury, Total 0.18 0.02 0.15 101.9 Potaesium, Total 3080 840 2370 94.6 Magnesium, Total 6930 4500 2370 102.3 Manganese, Total 394 340 47.5 115.4* Molybdenum, Total 89.5 0.18u 94.9 94.3 Sodium, Total 2470 155 2370 97.7 Nickel, Total 53.9 8.3 47.5 96.0 Lead, Total 48.9 4.3 47.5 93.9 Selenium, Total 175 0.40u 190 92.0 Thallium, Total 175 0.40u 190 92.0			Boron, Total	86.7	0.54	94.9	90.8	1.0
Bismuth, Total 448 0.62u 474 94.5 Calcium, Total 8780 6950 2370 76.9 Cadmium, Total 4.6 0.11 4.7 95.6 Chromium, Total 36.1 19.6 19.0 86.8 Copper, Total 37.7 14.5 23.7 97.9 Iron, Total 25100 24100 94.9 1069 * Mercury, Total 0.18 0.02 0.15 101.9 Potassium, Total 3080 840 2370 94.6 Magnesium, Total 6930 4500 2370 102.3 Manganese, Total 394 340 47.5 115.4* Molybdenum, Total 89.5 0.18u 94.9 94.3 Sodium, Total 2470 155 2370 97.7 Nickel, Total 53.9 8.3 47.5 96.0 Lead, Total 48.9 4.3 47.5 93.9 Selenium, Total 175 0.40u 190 92.0 Thallium, Total 175 0.40u 190 92.0			Barium, Total	252	69.1	190	96.6	1.0
Calcium, Total 8780 6950 2370 76.9 Cadmium, Total 4.6 0.11 4.7 95.6 Chromium, Total 36.1 19.6 19.0 86.8 Copper, Total 37.7 14.5 23.7 97.9 Iron, Total 25100 24100 94.9 1069 * Mercury, Total 0.18 0.02 0.15 101.9 Potaesium, Total 3080 840 2370 94.6 Magnesium, Total 6930 4500 2370 102.3 Manganese, Total 394 340 47.5 115.4* Molybdenum, Total 89.5 0.18u 94.9 94.3 Sodium, Total 2470 155 2370 97.7 Nickel, Total 53.9 8.3 47.5 96.0 Lead, Total 48.9 4.3 47.5 93.9 Selenium, Total 175 0.40u 190 92.0 Thallium, Total 183 0.58u 190 96.4			Beryllium, Total	4.5	0.18	4.7	91.9	1.0
Cadmium, Total 4.6 0.11 4.7 95.6 Chromium, Total 36.1 19.6 19.0 86.8 Copper, Total 37.7 14.5 23.7 97.9 Iron, Total 25100 24100 94.9 1069 * Mercury, Total 0.18 0.02 0.15 101.9 Potaesium, Total 3080 840 2370 94.6 Magnesium, Total 6930 4500 2370 102.3 Manganese, Total 394 340 47.5 115.4* Molybdenum, Total 89.5 0.18u 94.9 94.3 Sodium, Total 2470 155 2370 97.7 Nickel, Total 53.9 8.3 47.5 96.0 Lead, Total 48.9 4.3 47.5 93.9 Selenium, Total 175 0.40u 190 92.0 Thallium, Total 183 0.58u 190 96.4			Bismuth, Total	448	0.62u	474	94.5	1.0
Chromium, Total 36.1 19.6 19.0 86.8  Copper, Total 37.7 14.5 23.7 97.9  Iron, Total 25100 24100 94.9 1069 *  Mercury, Total 0.18 0.02 0.15 101.9  Potassium, Total 3080 840 2370 94.6  Magnesium, Total 6930 4500 2370 102.3  Manganese, Total 394 340 47.5 115.4*  Molybdenum, Total 89.5 0.18u 94.9 94.3  Sodium, Total 2470 155 2370 97.7  Nickel, Total 53.9 8.3 47.5 96.0  Lead, Total 48.9 4.3 47.5 93.9  Selenium, Total 175 0.40u 190 92.0  Thallium, Total 183 0.58u 190 96.4			Calcium, Total	8780	6950	2370	76.9	1.0
Copper, Total       37.7       14.5       23.7       97.9         Iron, Total       25100       24100       94.9       1069 *         Mercury, Total       0.18       0.02       0.15       101.9         Potassium, Total       3080       840       2370       94.6         Magnesium, Total       6930       4500       2370       102.3         Manganese, Total       394       340       47.5       115.4*         Molybdenum, Total       89.5       0.18u       94.9       94.3         Sodium, Total       2470       155       2370       97.7         Nickel, Total       53.9       8.3       47.5       96.0         Lead, Total       48.9       4.3       47.5       93.9         Selenium, Total       175       0.40u       190       92.0         Thallium, Total       183       0.58u       190       96.4			Cadmium, Total	4.6	0.11	4.7	95.6	1.0
Iron, Total       25100       24100       94.9       1069       *         Mercury, Total       0.18       0.02       0.15       101.9         Potassium, Total       3080       840       2370       94.6         Magnesium, Total       6930       4500       2370       102.3         Manganese, Total       394       340       47.5       115.4*         Molybdenum, Total       89.5       0.18u       94.9       94.3         Sodium, Total       2470       155       2370       97.7         Nickel, Total       53.9       8.3       47.5       96.0         Lead, Total       48.9       4.3       47.5       93.9         Selenium, Total       175       0.40u       190       92.0         Thallium, Total       183       0.58u       190       96.4			Chromium, Total	36.1	19.6	19.0	86.8	1.0
Mercury, Total       0.18       0.02       0.15       101.9         Potassium, Total       3080       840       2370       94.6         Magnesium, Total       6930       4500       2370       102.3         Manganese, Total       394       340       47.5       115.4*         Molybdenum, Total       89.5       0.18u       94.9       94.3         Sodium, Total       2470       155       2370       97.7         Nickel, Total       53.9       8.3       47.5       96.0         Lead, Total       48.9       4.3       47.5       93.9         Selenium, Total       175       0.40u       190       92.0         Thallium, Total       183       0.58u       190       96.4			Copper, Total	37.7	14.5	23.7	97.9	1.0
Potaesium, Total 3080 840 2370 94.6  Magnesium, Total 6930 4500 2370 102.3  Manganese, Total 394 340 47.5 115.4*  Molybdenum, Total 89.5 0.18u 94.9 94.3  Sodium, Total 2470 155 2370 97.7  Nickal, Total 53.9 8.3 47.5 96.0  Lead, Total 48.9 4.3 47.5 93.9  Selenium, Total 175 0.40u 190 92.0  Thallium, Total 183 0.58u 190 96.4			Iron, Total	25100	24100	94.9	1069 *	1.0
Magnesium, Total       6930       4500       2370       102.3         Manganese, Total       394       340       47.5       115.4*         Molybdenum, Total       89.5       0.18u       94.9       94.3         Sodium, Total       2470       155       2370       97.7         Nickel, Total       53.9       8.3       47.5       96.0         Lead, Total       48.9       4.3       47.5       93.9         Selenium, Total       175       0.40u       190       92.0         Thallium, Total       183       0.58u       190       96.4			Mercury, Total	0.18	0.02	0.15	101.9	1.0
Manganese, Total       394       340       47.5       115.4*         Molybdenum, Total       89.5       0.18u       94.9       94.3         Sodium, Total       2470       155       2370       97.7         Nickel, Total       53.9       8.3       47.5       96.0         Lead, Total       48.9       4.3       47.5       93.9         Selenium, Total       175       0.40u       190       92.0         Thallium, Total       183       0.58u       190       96.4			Potassium, Total	3080	840	2370	94.6	1.0
Molybdenum, Total 89.5 0.18u 94.9 94.3 Sodium, Total 2470 155 2370 97.7 Nickel, Total 53.9 8.3 47.5 96.0 Lead, Total 48.9 4.3 47.5 93.9 Selenium, Total 175 0.40u 190 92.0 Thallium, Total 183 0.58u 190 96.4			Magnesium, Total	6930	4500	2370	102.3	1.0
Sodium, Total       2470       155       2370       97.7         Nickel, Total       53.9       8.3       47.5       96.0         Lead, Total       48.9       4.3       47.5       93.9         Selenium, Total       175       0.40u       190       92.0         Thallium, Total       183       0.58u       190       96.4			Manganese, Total	394	340	47.5	115.4*	1.0
Nickel, Total 53.9 8.3 47.5 96.0 Lead, Total 48.9 4.3 47.5 93.9 Selenium, Total 175 0.40u 190 92.0 Thallium, Total 183 0.58u 190 96.4			Molybdenum, Total	89.5	0.18u	94.9	94.3	1.0
Lead, Total       48.9       4.3       47.5       93.9         Selenium, Total       175       0.40u       190       92.0         Thallium, Total       183       0.58u       190       96.4			Sodium, Total	2470	155	2370	97.7	1.0
Selenium, Total       175       0.40u       190       92.0         Thallium, Total       183       0.58u       190       96.4			Nickel, Total	53.9	8.3	47.5	96.0	1.0
Thallium, Total 183 0.58u 190 96.4			Lead, Total	48.9	4.3	47.5	93.9	1.0
·			Selenium, Total	175	0.40u	190	92.0	1.0
Donathan makali ash as a san a			Thallium, Total	183	0.58u	190	96.4	1.0
Vanadium, Total 115 65.1 47.5 105.5			Vanadium, Total	115	65.1	47.5	105.5	1.0
Zinc, Total 93.7 44.9 47.5 102.7			Zinc, Total	93.7	44.9	47.5	102.7	1.0

### INORGANICS PRECISION REPORT 12/10/02

CLIENT: TNUHANFORD F03-005 H1977

LVL LOT #: 0211L177

WORK ORDER: 11343-606-001-9999-00

			INITIAL			DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	REPLICATE	RPD	FACTOR (REP)
F=#ER=E		<b>医性性性 医多种性 医克勒特氏 医阿拉拉姆氏</b> 状态	*******	***	#######	****
-001REP	B15YL7	Silver, Total	1.3	1.5	14.3	1.0
		Aluminum, Total	5290	5430	2.5	1.0
		Armenic, Total	3.4	3.6	5.7	1.0
		Boron, Total	0.54	0.54	0.74	1.0
		Barium, Total	69.1	70.2	1.6	1.0
		Beryllium, Total	0.18	0.15	14.9	1.0
		Bismuth, Total	0.62u	0.55u	NC	1.0
		Calcium, Total	6950	6480	7.0	1.0
		Cadmium, Total	0.11	0.11	3.9	1.0
		Chromium, Total	19.6	18.6	5.2	. 1.0
		Copper, Total	14.5	14.5	0.00	1.0
		Iron, Total	24100	24500	1.8	1.0
		Mercury, Total	0.02	0.02	9.5	1.0
		Potassium, Total	840	842	0.25	1.0
		Magnesium, Total	4500	4620	2.7	1.0
		Manganese, Total	340	373	9.3	1.0
		Molybdenum, Total	0.181	0.24	A 200	1.0
		Sodium, Total	155	154	0.84	1.0
		Nickel, Total	8.3	8.9	7.0	1.0
		Lead, Total	4.3	4.4	2.3	1.0
		Selenium, Total	0.40u	0.35u	NC	1.0
		Thallium, Total	0.58u	0.52u	NC	1.0
		Vanadium, Total	65.1	65.6	0.77	1.0
		Zinc, Total	44.9	46.0	2.4	1.0

### INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/10/02

CLIENT: TNUHANFORD F03-005 H1977 WORK ORDER: 11343-606-001-9999-00

			SPIKED	SPIKED		
SAMPLE	SITE ID	ANALYTE	SAMPLE	AMOUNT	UNITS	*RECOV
	医医性医院性经验性检查性医检查原性医療性	<b>西哥里岛西班里尼州省拉鲁州北西巴巴地区工艺名</b>	****	***	****	*=====
LCS1	02L0691-LC1	Silver, LCS	49.8	50.0	MG/KG	99.6
·		Aluminum, LCS	488	500	MG/KG	97.5
		Armenic, LCS	949	1000	MG/KG	94.9
		Boron, LCS	472	500	MG/KG	94.4
		Barium, LCS	494	500	MG/KG	98.8
		Beryllium, LCS	24.5	25.0	MG/KG	96.0
		Bismuth, LCS	485	500	MG/KG	97.0
		Calcium, LCS	2420	2500	MG/KG	96.8
		Cadmium, LCS	24.7	25.0	MG/KG	98.8
		Chromium, LCS	51.6	\$0.0	MG/KG	103.2
		Copper, LCS	126	125	MG/KG	101.0
		Iron, LCS	506	500	MG/KG	101.2
		Potassium, LCS	2380	2500	MG/KG	95.4
		Magnesium, LCS	2390	2500	MG/KG	95.4
		Manganese, LCS	78.0	75.0	MG/KG	104.0
		Molybdenum, LCS	512	500	MG/KG	102.4
		Sodium, LCS	2440	2500	MG/KG	97.5
		Nickel, LCS	200	200	MG/KG	99.9
		Lead, LCS	247	250	MG/KG	98.9
		Selenium, LCS	910	1000	MG/KG	91.0
		Thallium, LCS	999	1000	MG/KG	99.9
		Vanadium, LCS	258	250	MG/KG	103.3
		Zinc, LCS	98.6	100	MG/KG	98.6
LCS1	02C0350-LC1	Mercury, LCS	2.3	2.5	MG/KG	92.4

Lionville Labor	atory (	Jse Only	JUSI	Juy 1	i i ces c	<b></b> .			-																
02111	-17	1	1	FIELD PI	ERSONN	IEL:	COM	PLETE	only s	HADED	ARE	AS B	C		D			E		٦	5		28A 2011 I A	ersexii o	<b>y</b> (8)
70	7	tantord	En	3-005	<del></del>			Refriger	etor #			4	4		FI		T	41		दा	या				
1			<u>F9</u>	3-0-0			}	<u>-</u> _		Liquid	'		- 1									en en en en en en			
Est. Final Pro	j. <b>Se</b> mij	13.43-608-	001-90	199-01	0	<del></del>		#/Type (	Container	Solid	lae	last	GC.		laı			bu		lor	امدا				
Project Conta						<del></del>		Malama		Liquid	C		0		0			Ü	, i	•				( ) ( ) ( ) ( )	1
Lionville Labe	oratory	Project Manag	or Ord	2 tto	Lohn	Con.		Volume		Solid	luo	920	350		8			170		500	LO				14%
oc 26c	<u></u>	Del Sti		3045	Damo			Preserv	ratives		_	1		}	-				)   	ي در د			*		1
				-				ANALY	'ese				ANIC		30			INC	DRG	<u> </u>	+	+	+	+	-
Date Rec'd	<u>_11-7</u>	9.02	Date Du		2-19-0	<u> </u>		REQUE		-	5 ₹	₹	1 2 2	F F	A Constitution			Metal	8	$\sim \epsilon$	王		1	1	1
MATRIX						M	ıtrix	<del> </del>	T		1	1 11	100	Ī	TT	Lionvi				डाई	. 1	<u>.                                    </u>	┸		
CODES:	Leb		Kent then-			0	C Deen		Date	Time	Ŧ	\ <u>\</u>	Τ	<u> </u>	$\top$			DOI at	UN U		<del>y</del>	T *	Ţ	T -	Τ
S - Soil SE - Sediment	) ID	, ,	Hent IO/Des	creption			7)	Matrix	Collected	Collecter		0625 X	OPLB	-	25	}	ļ	9	į	INOR4 ()	=	{		}	1
\$0 - Solid SL - Sludge	<b></b>					MS	MSD		<u> </u>		0	20	Ö	}	3	} }		Z,	ì	1 2	FOH		1	Ì	
W - Water O - Off	$\infty$ 1	815	117	<u></u>	<u> </u>	X	X	5	11-11-02	0939	X	X	X		X			Χ	7	X	X	1	+	<del> </del>	+-
A - Alt DS - Drum	ļ																	1					1	1	1
Solida DiL - Drum	<u> </u>					<u> </u>		·																	
L EP/TCLP				······································																1					
Leachate WI - Wice	<u> </u>																								$\prod$
X - Other F - Fish																									Π
										-															
1				-																					
}																								1	
Special Instruct	ions:						DATE	REVISION	18: 1. <u>A.</u> 130	ر ارم	۵ ۵	15.	۵.	41.7	k. 18	R /	٠ G.			Lionvi	lle Lab	ratory	/ Use O	nly	
}							Fic											Se	mples	werey	or		imper Res Presen		
									E. Fr. M.									· ] Ha	ind Del	livered .		P:	ackage (	(A) a.	N
	•						INOR	a 0 .	ICCL.	KFL.	ICAN	3 , L	NOL	rcpe	14 I	csof		Air	bill # r	/	<u> </u>		Unbrok		
							_			2. IAI				<b>L</b> cA						relig Roy G			ckage ( Preserv		
}						•													<u> </u>	edin G			·	(y) or	N
			^	1				;	o									- 1			. 19		Unbrok ample(1		N
					_			6	)										Sampk oerly 1	esi Pr <b>eser</b> v	ed		•		
Relinquished	T	Received	Date	Time	Reli	nquis	hed		Received	" _s D	ste	Tim				s Betwe	en	• • • • • • • • • • • • • • • • • • • •			N		OC Reco		
by		by		1,1110	<b>∤}</b>	by C	14.11	OSIT	_by	PR	Ğı	HAL		Samp	ies Lab Record	els and 7 Y or	(A)			ed With	in		(		N
Stell Ex		Districtor	11.19.02	010	<b>                                     </b>		-W.	STE	<b>.</b>	-REY	VR I	TTE	N	NOTE			_	HO	iding T )		N		mp. L	4.3	. •С
<del></del>		1)			<u> </u>									791	<u>a 3</u>	430	507	<u>t/a</u>	.1`	<u> </u>	<u>a 3</u>	13O	503	<u>o_</u>	
																_						110 -			

7912 3430 5052/ 2.4"

FH-Centra	l Plateau Project	CI	IAIN OF CUST	ODY/S	AMP	LEA	NALY	SIS	RE	EQUEST	L	F03-	-005-011	ltake Y	<u>.</u>
Collector P. NIC	l'Son	Compa	ny Contact e Trent	Telephon 373-58	e No.				Pro	oiect Coordin ENT, SJ	ator p	Price Code 8N		Data Tur	
Project Designation 200 Area Source C	haracterization 200-CS-1 OU - Wa		ing Location							F No. 3-005	A	Air Quality [		45 1	Days
Ice Chest No. 5	EE 0396		ethook No. -N-3251		COA 11751	14ES10				thod of Ships Federal Expres					
Shipped To	MAINOR REC	P.A. Offsite	Preperty No.	030	030	٥			Bil	il of Lading/	Air Bill No	) Set	5 05 7	'حــ	<u> </u>
POSSIBLE SAMP	LE HAZARDS/REMARKS			1		_ {	ļ						\	\	
	÷		Preservation	Cool 4C	Cool		Cool 4C	Cool	14C	None	None	None	None :	None	
Special Handling	and/or Storage		Type of Container	ય.G	<b>a</b> (	G	<b>√</b> G	*	G	26	a.Gr	97 aG	aG	aG	N 11/13/02
	, •		No. of Container(s)	1	1	י ו	1	ī	ı	1	1		1 1	1	
			Volume	60g	250	- 1	60g	25	_	125g	500g	60g	1000	500g	
		<del></del> ,	L	60ml	250 See hor		Abohols,	250	_	120m1 See item (2) in	500m		See item (1)	500/1 Nickel63;	ļ <u>.</u>
	0.1.55			(TCL)	Spec	ciel	Glycols, & Ketones		- 5002	Special Instructions	Special Instruction	9045	Special Instructions	Technolium-	
	Sample anai	TASIR		<b>j</b> .			8015M (Add- on) {1-					· ]	20.	<b>~</b> 1 ils	
ĺ				ļ	}	j	Propenol, Bithenol)			1			1 /2/2	1.	[.
Sample No	o. Matrix *	Sample Date	Sample Time				*** ** * * * *						171	kiri	02
B15YL7	SOIL	11-14-02		χ	T	/	χ		/		V.	У		retirent han harre	60 W S 30
		11 1750	0121	<del>                                     </del>	1-1	<del>`</del>		-		+	<del>                                     </del>	<del>                                     </del>	<del>                                     </del>	<del>-                                    </del>	<del></del>
			<del></del>	<del> </del>	╁╼┈	-+		-		+		<del>                                     </del>	<del> -/</del>	+/	<del>}</del>
		<u> </u>		<del> </del>	<del>                                     </del>			_		<del> </del>	<u> </u>	<del></del>	<del>                                     </del>	₩	<del>                                     </del>
				<del>                                     </del>	<del> </del>			-		<del> </del>		<del>                                     </del>	1/	<del></del>	<del> </del>
CHAIN OF P	OSSESSION	Sign/Prin	it Names	<del></del>	1	SPECL	AL INSTR	UCTIO	ONS	_ <del></del> }	L	1,	<u>.l.</u>		Matrix *
<del></del>	ed From Date/Time 1372 R. Nillson 11-14-02	Received By/Sto	red in Do	ate/Time (3						impling instruction	ons.				S-Sail SE-Sa <del>liacu</del> t
Relinguished By/Remov	R-NICION II-IH-NO-	1 KCF #		14-02 ate/Time		(1) Serr (2) ICP	ni-VOA 82 Metala - 60	70A (A 10A (Su	dd-O	n) (Tributyl pho ace) (Arsenic, B	ephate); TP arium, Cadr	H-Diesel Range nium, Chromiun	- WTPH-D n, Lead, Selen	ium, Silver);	50-Solid 51-Shadge
SJOH CEVIL	4 /	Coceived By Sto			- }	ICP Me	tals - 6010A	(Supert	race /	Add-On) (Alumi	imum, Beryll	ium, Bismuth, B	loron, Calcium	i, Copper,	0=01 W = Water
Relinquished By/Remov		Received By/Sto	red in A A D	ate/Tune	(	Mercury	v - 7471 - (C	V): Clin	occius	olybdeniam, Nicl m Hex - 7196					A=Air DS-Drum Solids
	1802 1/00	SJGALA	14800 1118	102 11	00	(3) IC	Anions - 300.	O (Chic	oride,	Fluoride, Nitrat	e, Nitrite, Pl	hosphate, Sulfati	;}; NO2/NO3	- 353.2;	DL-Drum Liquid
Relinquished By/Remov	ed From Date/Time	Received By/Sto	red/fix D	ate/Time		(4) Gro	es Aloba: Gr	oas Bet	a: Gar	); Total Cyanide mma Spectrosco	oy (Cesium	-137, Cobelt-60	, Europium-1	52, Europium-	Wi=Wipt L=Liquid
SJGALE STA			red to Da	ate/Time	{	154, Em Radium	<del>ropiam-155)</del> -226, Radium	; Gamm -228, S	m Spe Sodium	ec - Add-on (An m-22, Tin-126);	nericitum-24 Isotopic Ph	), Antimony-12: nonium; Isotopi	5, Barium-133 ; Thorium (Ti	, Cestorn-134, torium-232};	V=Vegetation X=Other
Retinquished Bygremov	<u> </u>		160214103	<u> - 0910</u>	1	Isotopic	: Unanium; St	roetium	1- <b>89,9</b>	0 Total Sr; Ca (Add-on) (Curi	ubon-14; No	epturium-237; T	otal Uranium;	Americium-	
Relinquished By/Remov	ed From — Dute/Time!	Received By/Sto	red in Di	ate/Time		, .				• • •	•	vailable to			ļ
LABORATORY SECTION	Received By			Tr	tle					reling	uish sam	ples from the	3728 <u>0</u> 2	Date/Time	
FINAL SAMPLE DISPOSITION	Disposal Method				<del></del>		Dispo	sed By						Date/Time	<u> </u>

# LIONVILLE LABORATURY INCURPURATED SAMPLE RECEIPT CHECKLIST

JENT:	Thu	Han	for d
-------	-----	-----	-------

chase Order/Project:

DATE: 11-19.02

F03-005 F# /SOW# / Release #:

boratory SDG #:

00,00	OaliLi7	7			•
TE:	ALL ENTRIES MARKED "NO" MUST BE	EXPLAINED I	N THE COMM	ENT SECTION	Y
1.	Custody seals on coolers or shipping container intact, signed and dated?	N/Yes	□ N ₀	DN/A	☐ see Comment #
2.	Outside of coolers or shipping containers are free from damage?	SyYes	□ No	□ N/A	□ see Comment #
3.	Airbill # recorded?	Dives	□ No	□ N/A	□ see Comment #
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	gres	[°] □ No	. □N/A	□ see Comment #
5.	Sample containers are intact?	YYes	□ No	D N/A	☐ see Comment #
6.	Custody seals on sample containers intact, signed and dated?	DyYes	□ No	D N/A	□ see Comment #
7.	All samples on coc received?	Yes	□ No	D N/A	· D see Comment #
8.	All sample label information matches coc?	of es	□ 1/0	D N/A	D see Comment#
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	TYYes	□ No	D N/A	☐ see Comment #
	Shipment meets LvLl Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	11-14-0	2 No	□ N/A	see Comment # (
11.	Where applicable, bar code labels are affixed to coc?	D Yes	© №	DNIA	Daec Comment #
12.	coc signed and dated?	Tres	□ No	□ N/A	see Comment #
13.	coc will be faxed or emailed to client?	<b>B</b> Yes	□ No	□ N/A	See Comment #
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	□ Yes	□ No	D N/A	□ see Comment#

Cooler #/temp (°C) and Comments; ERC 99 - 058/14.3°C

ERC FS 002/2.40 ERC 99.055/2.100

Laboratory Sample Custodian:

Laboratory Project Manager:

#1 Cooler ERC 99.058= 14.3"

# Lionville Laboratory, Inc. INORGANIC ANALYTICAL DATA PACKAGE FOR TNUHANFORD F03-005 H1977

LVL LOT # :0211L177 DATE RECEIVED: 11/19/02 CLIENT ID /ANALYSIS LVL # MTX PREP # COLLECTION EXTR/PREP ANALYSIS B15YL7 S 02L%S127 11/14/02 11/20/02 11/21/02 % SOLIDS 001 11/20/02 11/26/02 11/26/02 % SOLIDS 001 REP S 02L%S127 11/14/02 11/21/02 CHLORIDE BY IC 001 S 02LICA80 11/14/02 11/26/02 CHLORIDE BY IC 001 REP S 02LICA80 11/14/02 11/26/02 001 MS S 02LICA80 11/14/02 11/26/02 11/26/02 CHLORIDE BY IC 11/26/02 FLUORIDE BY IC 001 S 02LICA80 11/14/02 11/26/02 S 02LICA80 S 02LICA80 S 02LICA80 11/14/02 11/26/02 11/26/02 FLUORIDE BY IC 001 REP 11/14/02 11/26/02 FLUORIDE BY IC 001 MS 11/26/02 001 11/14/02 S 02LICA80 NITRITE BY IC 11/26/02 11/26/02 S 02LICA80 S 02LICA80 NITRITE BY IC 001 REP 11/14/02 11/26/02 11/26/02 NITRITE BY IC 001 MS 11/14/02 11/26/02 11/26/02 S 02LICA80 NITRATE BY IC 001 11/14/02 11/26/02 11/26/02 S 02LICA80 NITRATE BY IC 11/14/02 001 REP 11/26/02 11/26/02 NITRATE BY IC S 02LICA80 001 MS 11/14/02 11/26/02 11/26/02 S 02LCB89 TOTAL CYANIDE 11/21/02 11/21/02 001 11/14/02 S 02LCA89 11/21/02 001 REP 11/14/02 11/21/02 TOTAL CYANIDE S 02LCA89 001 MS 11/14/02 11/21/02 11/21/02 TOTAL CYANIDE S 02LICA80 S 02LICA80 S 02LICA80 S 02LICA80 S 02LVI037 S 02LVI037 S 02LVI037 S 02LVI037 PHOSPHATE BY IC 001 11/14/02 11/26/02 11/26/02 PHOSPHATE BY IC 001 REP 11/14/02 11/26/02 11/26/02 PHOSPHATE BY IC 001 MS 11/14/02 11/26/02 11/26/02 CHROMIUM VI 001 11/14/02 11/22/02 11/22/02 001 REP 11/14/02 11/22/02 CHROMIUM VI 11/22/02 11/14/02 CHROMIUM VI 001 MS 11/22/02 11/22/02 001 MSD CHROMIUM VI 11/14/02 11/22/02 11/22/02 SULFATE BY IC 001 S 02LICA80 11/14/02 11/26/02 11/26/02 S 02LICA80 S 02LICA80 S 02LICA80 SULFATE BY IC 001 REP 11/14/02 11/26/02 11/26/02 11/26/02 SULFATE BY IC 001 MS 11/14/02 11/26/02 S 02LN3D85 S 02LN3D85 S 02LN3D85 11/22/02 NITRATE NITRITE 001 11/14/02 11/22/02 001 REP 11/22/02 NITRATE NITRITE 11/14/02 11/22/02 001 MS 11/14/02 11/22/02 NITRATE NITRITE 11/22/02 AINONIA 001 S 02LAMA34 11/14/02 12/02/02 12/05/02 S 02LAMA34 AMMONIA 001 REP 11/14/02 12/02/02 12/05/02 AIROMMA 001 MS S 02LAMA34 11/14/02 12/02/02 12/05/02 PH 001 S 02LPH093 11/14/02 11/21/02 11/21/02

S 02LPH093

11/14/02

11/21/02

001 REP

PH



11/21/02

# Lionville Laboratory, Inc. INORGANIC ANALYTICAL DATA PACKAGE FOR TNUHANFORD F03-005 H1977

DATE RECEIVED: 11/19/02 LVL LOT # :0211L177

DATH RECEIVED: 2-7-	-,				-		
CLIENT ID /ANALYSIS	LVL	#	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SULFIDE	001		s	02LSD055	11/14/02	11/22/02	11/22/02
SULFIDE		REP	S	02LSD055	11/14/02	11/22/02	11/22/02
SULFIDE	001	MS	S	02LSD055	11/14/02	11/22/02	11/22/02
AB QC:							
	WD 2		0	027 707 0	N / A	11 /26 /02	17/26/00
CHLORIDE BY IC	MB1 MB1	ממ	s s	02LICA80 02LICA80	N/A N/A	11/26/02 11/26/02	11/26/02 11/26/02
CHLORIDE BY IC FLUORIDE BY IC	MB1	ದಿವ	S	02LICA80	N/A	11/26/02	11/26/02
FLUORIDE BY IC	MB1	RC	S	02LICA80	N/A	11/26/02	11/26/02
NITRITE BY IC	MB1		S	02LICA80	N/A	11/26/02	11/26/02
NITRITE BY IC	MB1	BS	S	02LICA80	N/A	11/26/02	11/26/02
NITRATE BY IC	MB1		Š	02LICA80	N/A	11/26/02	11/26/02
NITRATE BY IC	MB1	BS	Š	02LICA80	N/A	11/26/02	11/26/02
TOTAL CYANIDE	LCS		s	02LCB89	N/A	11/21/02	11/21/02
TOTAL CYANIDE	LCS		S	02LCB89	N/A	11/21/02	11/21/02
TOTAL CYANIDE	MB1		S	02LCB89	N/A	11/21/02	11/21/02
TOTAL CYANIDE	LCS	L	S	02LCA89	N/A	11/21/02	11/21/02
TOTAL CYANIDE	LCS	L	S	02LCA89	A/N	11/21/02	11/21/02
TOTAL CYANIDE	MB1		S	02LCA89	N/A	11/21/02	11/21/02
PHOSPHATE BY IC	MB1		S	02LICA80	N/A	11/26/02	11/26/02
PHOSPHATE BY IC	MB1	BS	S	02LICA80	N/A	11/26/02	11/26/02
CHROMIUM VI	MB1		S	02LVI037	N/A	11/22/02	11/22/02
CHROMIUM VI	MB1		S	02LVI037	N/A	11/22/02	11/22/02
CHROMIUM VI		BSD	S	02LVI037	N/A	11/22/02	11/22/02
SULFATE BY IC	MB1 MB1	ממ	s s	02LICA80	N/A	11/26/02	11/26/02
SULFATE BY IC NITRATE NITRITE	MB1	85	S	02LICA80 02LN3D85	A\n A\n	11/26/02 11/22/02	11/26/02 11/22/02
NITRATE NITRITE	MB1	nc	S	02LN3D85	N/A N/A	11/22/02	11/22/02
AMMONIA	MB1	55	S	02LAMA34	N/A	12/02/02	12/05/02
AMMONIA	MB1	BS	S	02LAMA34	N/A	12/02/02	12/05/02
AMMONIA		BSD	S	02LAMA34	N/A	12/02/02	12/05/02
SULFIDE	MB1		S	02LSD055	N/A	11/22/02	11/22/02
SULFIDE	MB1	BS	S	02LSD055	N/A	11/22/02	11/22/02
			_			,, ~~	,,



### **Analytical Report**

Client: TNU-HANFORD F03-005 H1977

LVL#: 0211L177

W.O.#: 11343-606-001-9999-00

Date Received: 11-19-02

#### INORGANIC NARRATIVE

This narrative covers the analyses of 1 soil sample. 1.

- The sample was prepared and analyzed in accordance with the methods indicated on the attached 2. glossary.
- Sample holding times as required by the method and/or contract were met with the exception of 3. Sulfide analysis that were performed past hold.
- The results presented in this report are derived from samples that did not meet LvLI's sample 4. acceptance policy as noted on the Sample Receipt Checklist.
- The method blanks were within the method criteria. 5.
- The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate 6. LCS for Ammonia was within the 20% Relative Percent Difference (RPD) control limit.
- 7 The matrix spike recoveries for Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Chromium VI, Sulfate, Nitrate Nitrite, Ammonia, Sulfide and Total Cyanide were within the 75-125% control limits.
- 8. The replicate analyses for Chloride, Fluoride, Nitrate, Nitrite, Chromium VI, Sulfate, Ammonia, pH, Sulfide, Percent Solids, Total Cyanide, Phosphate and Nitrate Nitrite were within the 20% RPD control limit.
- 9. Results for solid samples are reported on a dry weight basis.

I certify that this sample data package is in compliance with SOW requirements, both technically 10. and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels

Laboratory Manager

Lionville Laboratory Incorporated

njp\i11- 177

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 14 pages.

# Lionville Laboratory Incorporated

# WET CHEMISTRY

## METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
% Ash	D2216-80		
% Moisture	D2216-80		ILMO4.0 (e)
% Solids	D2216-80		ILMO4.0 (e)
% Volatile Solids	D2216-80		<del>-</del>
ASTM Extraction in Water	D3987-81/85		
BTU	D240-87		
CEC	<del></del>	9081	c
Chromium VI		√3060A/7196A	
Corrosivity by coupon by pH		1110(mod) 9045C	
Cyanide, Total		√ 9010B/9014	ILMO4.0 (e)
Cyanide, Reactive		Section 7.3/9014	
Halides, Extractable Organic		9020B	EPA 600/4/84-008
Halides, Total		9020B	EPA 600/4/84-008
EP Toxicity		1310A	
Flash Point		1010	
Ignitability		1010	
Oil & Grease		9071A	
Carbon, Total Organic		9060	_ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	D240-87(mod)	5050	
Petroleum Hydrocarbons, Total Rec	overable	9071	EPA 418.1
pH, Soil		✓ 9045C	
Sulfide, Reactive		Section 7.3/9030B	
Sulfide		✓ 9030B(mod)	
Specific Gravity	D1429-76C/ _	D5057-90	
Sulfur, Total		9056	
Synthetic Preparation Leach		1312	
Paint Filter		9095A	
Other: Chearide Hararide Ac	hate Method: E	PA 300.0 (mod.)	········
Other: Nitrite Charabote &	Method		
Mitrate Mitrita	D' E	PA 353.2 (mod.) PA 350.3 (mod.)	)
ammonia	E	PA 350.3 (mod.)	

## Lionville Laboratory Incorporated

# METHOD REFERENCES AND DATA QUALIFIERS

## DATA QUALIFIERS

- U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * = Indicates that the original sample result is greater than 4x the spike amount added.

## **ABBREVIATIONS**

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LC = Laboratory Control Sample.

NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

# ANALYTICAL WET CHEMISTRY METHODS

- 1. ASTM Standard Methods.
- USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
- 3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
- a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
- b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
- c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
- d. <u>Method of Soil Analysis</u>, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
- e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
- f. Code of Federal Regulations.

#### INORGANICS DATA SUMMARY REPORT 12/10/02

CLIENT: TNUHANFORD F03-005 H1977 WORK ORDER: 11343-606-001-9999-00 LVL LOT #: 0211L177

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
	工作品或品质用品的工作的 化分子工作 化拉拉			*****		
-001	B15YL7	% Solids	95.8	*	0.01	1.0
		Chloride by IC	1.3 u	MG/KG	1.3	1.0
		Fluoride by IC	1.3 u	mg/kg	1.3	1.0
		Nitrite by IC	1.30 u	MG/KG	1.30	1.0
		Nitrate by IC	10.6	MG/KG	1.30	1.0
		Cyanide, Total	0.34 u	MG/KG	0.34	1.0
	•	Phosphate by IC	2.8	MG/KG	1.3	1.0
		Chromium VI	2.7	MG/KG	0.42	1.0
		Sulfate by IC	5.9	MG/KG	1.3	1.0
		Nitrate Nitrite	2.7	MG/KG	0.16	1.0
		Ammonia, as N	2.6 u	MG/KG	2.6	1.0
		На	8.6	SOIL PH	0.01	1.0
		Sulfide	25.7 u	MG/KG	25.7	1.0

#### INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/10/02

CLIENT: TNUHANFORD F03-005 H1977

LVL LOT #: 0211L177

WORK ORDI	R:	11343-606-001-9999-00
-----------	----	-----------------------

WORK ORDE	K; 11343 000 001 3333	••				
					REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	医抗多性性性性炎病毒	*********	****		*****	
BLANKIO	02LICA80-MB1	Chloride by IC	1.2 u	MG/KG	1.2	1.0
		Fluoride by IC	1.2 u	MG/KG	1.2	1.0
		Nitrite by IC	1.25 կ	MG/KG	1,25	1.0
		Nitrate by IC	1.25 u	MG/KG	1.25	1.0
		Phosphate by IC	1,2 u	MG/KG	1.2	1.0
		Sulfate by IC	1.2 u	MG/KG	1.2	1.0
BLANK1	02LCB89-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
BLANK1	02LCA89-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
BLANK10	02LVI037-MB1	Chromium VI	0.40 u	MG/KG	0.40	,1.0
BLANK10	02LN3D85-MB1	Nitrate Nitrite	0.20 u	MG/KG	0.20	1.0
BLANK10	02LAMA34-MB1	Ammonia, as N	2.5 u	MG/KG	2.5	1.0
BLANK10	02LSD055-MB1	Sulfide	40.0 u	MG/KG	40.0	1.0

#### INORGANICS ACCURACY REPORT 12/10/02

CLIENT: TNUHANFORD F03-005 H1977 WORK ORDER: 11343-606-001-9999-00 LVL LOT #: 0211L177

			SPIKED	INITIAL	SPIKED		DILUTION
SAMPLE	SITE ID	ANALYTE	SAMPLE	RESULT	TRUOMA	*RECOV	Factor (SPK)
***	<b>电电影运动电影水车电影工作四层电影不</b> 电		##E 2 2 2 2	*****	****	****	****
-001	B15YL7	Chloride by IC	28.6	0.79	26.1	106.3	1.0
		Fluoride by IC	27.2	0.44	26.1	102.6	1.0
		Nitrite by IC	26.0	1.30u	26.1	99.4	1.0
		Nitrate by IC	36.7	10.6	26.1	100.1	1.0
		Cyanide, Total	4.76	0.34u	5.24	90.9	1.0
		Phosphate by IC	30.4	2.8	26.1	105.5	1.0
		Soluble Chromium VI	7.7	2.7	4.2	120.6	1.0
		Insoluble Chromium VI	1110	2.7	1010	110.2	100
		Sulfate by IC	32.7	5.9	26.1	102.6	1.0
		Nitrate Nitrite	7.0	2.7	4.7	92.7	1.0
		Ammonia, as N	99.9	2.6 u	102	98.2	1.0
		Sulfide	400	8.3	389	100.7	1.0
BLANK10	02LICA80-MB1	Chloride by IC	24.0	1.2 u	25.0	96.1	1.0
		Fluoride by IC	25.6	1.2 u	25.0	102.4	1.0
		Nitrite by IC	24.6	1.25u	25.0	98.2	1.0
		Nitrate by IC	23.6	1.25u	25.0	94.5	1.0
		Phosphate by IC	24.9	1.2 u	25.0	99.6	1.0
		Sulfate by IC	24.0	1.2 u	25.0	96.1	1.0
BLANK10	02LVI037-MB1	Soluble Chromium VI	4.1	0.40u	4.0	103.2	1.0
		Insoluble Chromium VI	1100	0.40u	1160	94.9	100
BLANK10	02LN3D85-MB1	Nitrate Nitrite	5.2	0.20u	5.0	103.0	1.0
BLANK10	02LAMA34-MB1	Ammonia, as N	102	2.5 u	100	102.0	1.0
		Ammonia, as N MSD	104	2.5 u	100	103.8	1.0
BLANK10	02LSD055-MB1	Sulfide	456	40.0 u	471	96.9	1.0

### INORGANICS DUPLICATE SPIKE REPORT 12/10/02

CLIBNT: TNUHANFORD F03-005 H1977

LVL LOT #: 0211L177

WORK ORDER: 11343-606-001-9999-00

SPIKB#1 SPIKB#2

SAMPLE	SITE ID	ANALYTE	*RECOV	*RECOV	*DIFF
	立三世界三年 2 万 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	双角等取出的自然实现自然自然的自然和自然和自	****	*====	****
BLANK10	02LAMA34-MB1	Ammonia, as N	102.0	103.8	1.7

#### INORGANICS PRECISION REPORT 12/10/02

CLIENT: TNUHANFORD F03~005 H1977

LVL LOT #: 0211L177

WORK ORDER: 11343-606-001-9999-00

			INITIAL			DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	REPLICATE	RPD	FACTOR (REP)
*****	프로본다음부음자로프롬프랑드등드덕름부르	<b>克马克克特尼尼姆克尔西班牙克特克尼亚克里尼尔</b> 克	=#=C#===	==##==###		****
-001REP	B15YL7	* Solids	95.B	95.2	0.57	1.0
		Chloride by IC	1.3 u	2.0	NC	1.0
		Fluoride by IC	1.3 u	1.3 u	NC	1.0
		Nitrite by IC	1.30u	1.30u	ис	1.0
		Nitrate by IC	10.6	10.7	0.83	1.0
		Cyanide, Total	0.34u	0.62u	NC	1.0
		Phosphate by IC	2.8	2.7	5.7	1.0
		Chromium VI	2.7	3.1	15.5	1.0
		Sulfate by IC	5.9	5.9	0.71	1.0
		Nitrate Nitrite	2.7	2.7	1.2	1.0
		Ammonia, as N	2.6 u	2.6 u	NC	1.0
		pH	8.6	8.6	0.3	1.0
		Sulfide	25.7 u	22.9 u	NC	1.0

#### INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/10/02

CLIENT: TNUHANFORD F03-005 H1977 LVL LOT #: 0211L177

WORK ORDER: 11343-606-001-9999-00

				SPIKED	SPIKED		
Sample	SITE ID	ANALYTE		Sample	TRUOMA	UNITS	*RECOV
	<b>国际发展实验者关系的过去式和复杂形式</b>	****	22222	=====	**==*=		
LCSS1	02LCB89-LCS1	Cyanide, Total	LCS	1.90	2.0	MG/KG	94.8
LCSS2	02LCB89-LCS2	Cyanide, Total	LCS	9.71	10.0	MG/KG	97.1
LCSS1	02LCA89-LCS1	Cyanide, Total	LCS	2.11	2.0	MG/KG	105.4
LCSS2	02LCA89-LCS2	Cyanide, Total	LCS	9.83	10.0	MG/KG	98.3

ionville Labor	atory O	Se Only	Cusic	oay ira	11151		nec	JIWL	.av	** ~	•••		<b>7</b>		-						W I		_
02111	177	, \	1	RELD PERS	ONNEL	: COM	IPLETE	ONLY S	HADED	ARE	_							_			V		
							<del></del>			<u> </u>	<u>B</u> ,	<u> </u>		D	<del></del>	E	·	F.,	5				二,
Client TO	$\overline{n}$	antord	Fo	3-005			Refriger	rator #	(	1_	4	4	<u> </u>	<u> </u>		4		4	-				
Est. Final Pro	j. Samp	ling Date					#/Туре	Container	Liquid			1						,	mairies				
		343-606	- 001.4	194.00	<del> </del>		<b>}</b> -		Solid Liquid	lag	bay	800		lay		Ey.		100	120				
Project Conta			~0				Volume		Solid	-				60		170		500	1.0				4.4
QC 5PC	oratory i C_	Project Mana	ger (U)VX	11 John 3045 Ca.		<u>,                                     </u>	Presen	entiven	-	100	330	450				10		عروا	.00				27
				<u> </u>	¥	<del></del>	1			-	<u> </u>	ANIC			<u> </u>	INC	ORG				1		
Date Rec'd _	11:19	1.0a-	Date Due	12-19	-0z		ANALY		-	₹ VOV		P.S.	£	Alcopie		Meral Seral	7	€3	五				· 
							· <del></del>	<del></del>	r	<u>                                    </u>	<u> </u>	4.4	Ť			75€	3	धर्	ł				
MATRIX CODES:	Lab	[			- 1	Matrix QC	1	}	}	=		}	•	_	Lionville L	borat	ory Us		<b>y</b>	<del>, ,</del>			
S - Soil SE - Sediment	GI	. '	Client ID/Desc	cription	\	hosen (🗸)	Matrix	Date Collected	Time Collected	# 72	0625 X	OPCB		2	-	9	s k	0.5	T	1 1	1		
SO - Solid SL - Sludge					M	MSD	1			0	80	9	1	000		¥ 20 € 1	}	TADA	H 0.1		i		,
W - Water	001	B15	YL7			X	5	11-14-02	0939	X	X	X		X		X		X	X		<del>}</del>	-+	
A - Air DS - Drum																/-		1				-	
Solids OL - Drum		<u></u>																					
Liquids L- EP/TCLP		<u> </u>		·						<u> </u>													
Leachate VI - Wipe		<u> </u>	<del></del>			1																	
(- Other - Fish			·																				
		·		·					<u></u>		L												_
				· · · · · · · · · · · · · · · · · · ·																			
		·			_	1			<u> </u>														_
						<u> </u>				<u> </u>													
Special Instructi	ions:					ME.	REVISION	s: A. Ba	cd. C	c Ph	So	Ae	Al: B	. B.	B, G. a	.			e Labo	ratory l	Use Ont	<u>y</u>	
								Fe Mg	M. (	Ma U	` K	11. 7	7 V	7.	H _o	1 04	mples v Shippe	metes.	or		per Resistr Present_o		
								•								Ha	nd Deli	vered _		Pac	kage (Ý	ort)	N
						INON		ICCL.							704			ول ب		2) U Pad	Inbroken kage 🕏	Jon Ou Dor t	nter /
							4	INSNI	L. INH	3 N	ISF	Ď (	ECN-	<u>ro</u>		2)(	Ambien	itor Chi	le)	3) P	resent o	Sam	ple
							5									Co	ndition(	din Ga	N N		Inbroken	ו סמ	- {
			,				6										Sample			Sam	nple(Y)	or N	1
Relinquished	<b>T</b>	Received	D-4-	Time	Relinqui	shed	F	eceived	" D=	. 1	Time	Tr.	Discre	pancies	Between	→ Pro	perly P (	reserve (f) or	d N		Record		
by		by	Date	Time	by	<b>.</b>		- by	<b>`_ORI</b>	GIN	ΑË	4	Sample	es Labe	and and		Receive	d Withia		Upor	n Sample		
x3 6x	12	Mids	11.19.02 09.10	11.19.02 09.10				57.	REN				NOTE		Y or (N)	Hok	ding Ti	ppes Y) or	N	Cool	er p. <u>14.</u>	<u>.3</u> ,	c
		),		]				:= -			• •••		791a	<u>. 3</u> 4	30.507	ŧ/a.	•	_			5030		_
<del></del>															112 34								

FH-Central	l Platear	ı Project	CI	IAIN OF CUST	ODY/S	AMI	PLE	ANALY	ZSIS	RE	QUEST	· <u> </u>	F03-	-005-011	Page 1	of 1
Collector P. Ni elson				ny Contact Trent	Telephone No. 373-5869					Pro	iect Coordin ENT, SJ	ator	Price Code 8N		Data Tur	naround Days
Project Designation 200 Area Source Characterization 200-CS-1 OU - Waste Man				ng Location						Ł	F No. -005	Ai	Air Quality [			Jays
Ice Chest No. 5	£60	396		.ogbook No. -N-3251		CO/ 1175	A 14ES1	0	<u> </u>	1	thod of Ships ederal Expres					
Shipped To EDERLINE SERV	13 1 1800 1005 (Form	L NOTIFIED RECR	Offsite	Property No.	030	03	0			Bill	l of Lading/	Lir Bill No.	<u> 567</u>	057	<u>'</u>	
POSSIBLE SAMPI	LE HAZAI	RDS/REMARKS		Preservation	Cool 4C	Cox	ol 4C	Cool 4C	Cool	14C	None	None	None	None	None	
Special Handling	z and/or Si	torage		Type of Container	ag		G	ą.G	8(	3	60 26	a.G	01 4G	GP AG	6/7 R a6,	N 11/13/02
				No. of Container(s)	1 60g	<u> </u>	1 50g	1 60g	250		1 125g	1 500g	1 60g	1000	500	
				Volume	60ml	<i>25</i> 0 A See ite	<u>کرما</u> m(1) in	60ml Alcohols,	250 PCBs -	<u>ما</u>	120m ( See item (2) in	500ml See item (3) is		Sec item (1) i		
		SAMPLE ANALY	'SIS		(LCT)		ecial ections.	Glycola, & Ketones - 8015M (Add- on) {1- Propanol, Ethanol}			Special Instructions	Special Instructions.	9045	Special Instructions	v1 ista	<b>\$</b>  02
Sample No	0.	Matrix *	Sample Date	Sample Time						. :	· · · · · · · · · · · · · · · · · · ·					
B15YL7		SOIL	11-14-02	0939	χ	<u> </u>	χ.	Х		(	X	Y	X	K	<del>                                     </del>	
						+-									1/	
														<del> /</del>	<del> </del>	
CHAIN OF PO	OCCECCIO	N	Sign/Prin	t Names	<u> </u>	l	SPEC	I CIAL INSTR		ONS	<u> </u>		<u>i</u>	1 -		Matrix *
Retinquished By/Remove	ed From LNiLlyo ed From		Received By/Sto RLF # Received By/Sto	red In   Da   Da   Da   Da   Da   Da   Da   D	ate/Time (3 -{4-02 ate/Time		** Pi (1) S (2) ICP N	lease see SAF f emi-VOA 82 CP Metals - 60 Metals - 6010A	for speci 270A (A 10A (Su . (Supert	ific sar dd-On pertra race A	mpling instruction  (Tributyl phouse) (Arsenic, Badd-On) (Alum	sphate}; TPF arium, Cadm inum, Berylli	i-Diesel Range nium, Chromium um, Bismuth, B n, Sodium, Thal	ı, Lead, Selen oron, Calcium	ı, Copper,	S-Soil SE-Sodiment SO-Soild SI-Sindge W = Water O-Oil
Relinquished By/Remov REF 113 11 1	red From 1802	Date/Time	Received By/Sto SJGALE Received By/Sto	Male 11/1	ate/Time	100	(3) I	ury - 7471 - (C C Amions - 300 conin - 350 3: Si	:V); Chr :0 {Chk ::lfides -	omium oride, ! . 9030:	n Hex - 7196 Fluoride, Nitrat : Total Cyanide	e, Nitrite, Ph - 9010	osphate, Sulfate	; NO2/NO3	- 353.2;	A=Air DS=Drum Solids DL=Drum Liquids T=Tissue W1=Wice
Relinquished By/Remov	<del>L</del> U_ ((_	1502 1100 Date/Time	Received Ry/Sto	red In D.	ate/Time	<b>)</b>	154, Radio Isotoj	Europium-155} um-226, Radium pic Uranium; St	; Game n-228, S trontium	за Spe Sodium 1-89,90	c - Add-on (An n-22, Tin-126);	aericium-241 Isotopic Plut arbon-14; Nej	-137, Cobalt-60, , Antimony-125 tonium; Isotopic ptunium-237; To	i, Barium-133. : Thorium {Th	, Cesium-134, norium-232};	L=Liquid V=Vegetation X=Other
Relinquished By/Remove		Date/Time	Received Bl/Sto	red In D	ste/Time		241;	raine neitheath 241	, curui		Perso	nnel not a	vailable to			
LABORATORY SECTION	Received By	,			1	Title					reling Ref#	uish samp _/_25 on	oles from the	3728 <u>0</u> 2	Date/Time	
FINAL SAMPLE DISPOSITION	Disposal Me	ethod						Dispo	sed By						Date/Time	

# LIONVILLE LABORATORY INCORPORATED SAMPLE RECEIPT CHECKLIST

CLIENT:	Thu	Hanford

urchase Order/Project:

DATE: 11-19.02-

F03-005 3AF# /SOW# / Release #:

Laboratory SDG #:

	ALL ENTRIES MARKED "NO" MUST BE				N .
1.	Custody seals on coolers or shipping container intact, signed and dated?	N/Yes	□ No	O N/A	U see Comment #
2.	Outside of coolers or shipping containers are free from damage?	TS/Yes	□ No	□ N/A	See Comment #
3.	Airbill # recorded?	DAY'es	□ No	□ N/A	☐ see Comment #
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	Yes	□ No	. □N/A	see Comment #
5.	Sample containers are intact?	Yes	□No	D N/A	□ see Comment i
6.	Custody seals on sample containers intact, signed and dated?	DyYes	□ No	□ N/A	· □ see Comment i
7.	All samples on coc received?	Yes	□ N ₀	□ N/A	☐ see Comment
8.	All sample label information matches coc?	Pres	□ No	O N/A	see Comment
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	Yes	□ No	D N/A	D see Comment
	Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	7 705 11-19.0	2 No	□ N/A	see Comment
11.	Where applicable, bar code labels are affixed to coc?	□ Yes	□ No	D.M/A	D see Comment
12.	coc signed and dated?	Ta Yes	□ No	□ N/A	🗆 see Comment
13.	coc will be faxed or emailed to client?	Yes	□ No	□ N/A	□ see Comment
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	☐ Yes	□ No	□ N/A	☐ see Comment

Cooler #/temp (°C) and Comments: ERC 99 - 058/14.3°C

ERC FS-002/2.40 ERC 99.055/2-100

Cooler ERC 99.058= 4.3" #(

Laboratory Sample Custodian:

Laboratory Project Manager: